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By Alameda County Environmental Health 11:00 am, Nov 01, 2011

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

Re: Former Olympic Service Station  
1436 Grant Avenue  
San Lorenzo, California  
ACEHD Case No. RO0000373, GeoTracker No. T0600102256

Dear Mr. Detterman:

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,  
George and Frida Jaber 1989 Family Trust



Philip Jaber, Trustee

October 31, 2017  
Project No. 2115-1436-01

Mr. Mark Detterman, P.G.  
Alameda County Environmental Health Department  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502

Re: **Additional Subsurface Investigation Report and Update to  
Focused Site Conceptual Model**  
Former Olympic Service Station  
1436 Grant Avenue, San Lorenzo, California  
LOP Case #RO0000373

Dear Mr. Detterman:

Stratus Environmental, Inc. (Stratus), on behalf of Mr. Philip Jaber and the George and Frida Jaber 1989 Family Trust, has prepared this *Additional Subsurface Investigation Report and Update to Focused Site Conceptual Model* for the Former Olympic Service Station located at 1436 Grant Avenue in San Lorenzo, California (the site, see Figures 1 through 3). Alameda County Environmental Health Department (ACEHD) currently regulates an environmental case on the subject property relating to a historical release of motor vehicle fuel to the subsurface. Between September and November 2016, Stratus prepared and submitted several documents on behalf of the subject site, which included the results of a post remediation subsurface investigation, the findings of a door-to-door reconnaissance intended to identify water supply wells near the site, the results of sampling of six offsite water supply wells, and findings of a quarterly groundwater monitoring and sampling event. After reviewing the content of these reports, ACEHD issued a letter, dated January 11, 2017, requesting that the site's Site Conceptual Model (SCM) be updated. The January 2017 letter also requested a work plan proposing activities needed to address 'data gaps' identified by the SCM as impediments to eventual closure of the site's environmental case. After reviewing the content of the letter, Stratus, ACEHD, and Mr. Jaber met to discuss the site, and develop a framework for the requested scope of work.

This report documents advancement of four direct push soil borings at locations requested by ACEHD. Soil samples were collected at all borings, and depth discrete groundwater samples were collected at three borings located downgradient of the former service station facility. Findings associated with this work are presented in this document. Information collected in recent months has also been used to update the Focused SCM for the site, and is included in this report.

## **SITE DESCRIPTION**

The subject site is located on the southern corner of the intersection of Grant Avenue and Channel Street in San Lorenzo, California. The site previously operated as the Olympic Service Station; it is currently operated as San Lorenzo Auto Repair. The current configuration of the property is depicted on Figure 2.

The adjoining property to the southwest and south is developed as the Arroyo Center strip mall. Properties to the north and northwest (across Grant Avenue) are developed as single family detached residences, and the property to the east and northeast (across Channel Street) has been developed as multi-family housing units (apartments or condominiums). A parking lot and athletic fields for Arroyo High School are situated on property north of Grant Avenue, across the intersection.

## **SITE BACKGROUND SUMMARY**

The following information has been summarized based on information presented in reports prepared by Reese Construction, Aqua Science Engineers, Inc. (ASE), and Conestoga-Rovers & Associates (CRA), and work performed by Stratus.

The former underground storage tanks (USTs) and associated product dispensers were removed in 1998. Ten groundwater monitoring wells (MW-1 through MW-4, MW-5A/B, MW-6A/B, MW-7A/B, and MW-8A/B), seven soil vapor sampling points (SV-1 through SV-7), seven extraction wells (EX-1 through EX-7), two ozone injection wells (IW-1 and IW-2), and nineteen exploratory soil borings (BH-A through BH-C, B-1 through B-13, and B-13A through B-13C) were installed between 1999 and 2015. Locations of the wells, vapor sampling points, and soil borings are shown on Figure 2. Drilling and well construction details are summarized in Table 1.

Chemicals of concern (COCs) at this site include gasoline-range organics (GRO)/total petroleum hydrocarbons as gasoline (TPHG), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and the gasoline additive methyl tertiary butyl ether (MTBE). Between 1999 and 2015, groundwater levels beneath the property have ranged between approximately 5.2 and 11.2 feet below ground surface (bgs). The site is currently under a semi-annual groundwater monitoring and sampling program; although ACEHD requested in the May 5, 2016 letter that all wells be sampled quarterly until further notice. A review of Table 1 indicates that five site wells (MW-4, MW-5A, MW-6A, MW-7A, and MW-8A) have been installed to approximately 10 to 12 feet bgs, while the other monitoring/extraction wells have been installed to depths ranging from approximately 20 to 26 feet bgs.

Groundwater samples have historically been analyzed for diesel-range organics (DRO) and the fuel additives di-isopropyl ether (DIPE), tertiary amyl butyl ether (TAME), ethyl

tertiary butyl ether (ETBE), tertiary butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB), and ethanol. These analytes are not currently included in the groundwater analytical suite.

In general, most soils situated in the upper 15 to 18 feet of the subsurface appear to be predominately fine grained (mixtures of silt/clay, exclusive of fill material). Below this depth, to approximately 25 feet bgs, soil strata have been described as silty sand, clayey sand, and sand.

Soil vapor sampling was performed at the site in 2010; in general, relatively high concentrations of GRO and BTEX were detected in these samples. GRO and benzene were reported at maximum levels of 52,000,000 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and 160,000  $\mu\text{g}/\text{m}^3$ , respectively, at that time.

Most of the petroleum hydrocarbon impact to the subsurface appears to have been situated above approximately 20 feet bgs, and in relatively close proximity to the former USTs and fuel dispenser islands (soil sample analytical data collected prior to Dual Phase Extraction [DPE] remediation is discussed below). In a September 2012 Corrective Action Plan (CAP), Stratus estimated that a mass of 955 pounds of TPHG/GRO were present in soil at the site above 20 feet bgs.

Based on our general understanding of the distribution of contaminants beneath the property, site geologic conditions, and depth to groundwater levels, DPE was selected as a possible remedial alternative for the site. In June 2011, a DPE pilot test was performed at the site, using wells EX-1 through EX-3 for extraction. Based on the findings of this test, DPE was deemed by Stratus to be a viable remedial alternative for the site. Stratus subsequently prepared a CAP for the property, recommending use of DPE at the site, and after receiving approval of this document, installed four additional extraction wells (EX-4 through EX-7).

In July 2014, Stratus initiated full scale DPE at the subject site. As of December 2, 2015, an estimated mass of 983 pounds of GRO had been removed from the subsurface in the vapor phase. Since initiation of DPE, a total of approximately 1,491,520 gallons of groundwater have been extracted from the subsurface, treated onsite using granular activated carbon (GAC), and discharged to the local sewer system. Influent vapor phase concentrations of fuel contaminants have declined appreciably over time, and since the summer of 2015, relatively low concentrations of fuel contaminants were being removed from the subsurface. DPE has been discontinued and the DPE thermal oxidizer has been removed from the site.

In December 2015, Stratus directed the installation of two groundwater monitoring wells (MW-7A and MW-8A), and two additional soil vapor probes (SV-6 and SV-7). After shut down of the DPE system, and allowing approximately one month for equilibration of

subsurface conditions, Stratus performed a soil vapor survey on January 28, 2016, (five of the seven wells could be sampled; two of the wells contained moisture and could not be sampled). GRO was detected in one sample (SV-6, 6,900  $\mu\text{g}/\text{m}^3$ ); benzene, ethylbenzene, and naphthalene were not detected in any of the samples. Given the findings of the 2016 soil vapor sampling event, DPE appears to have significantly reduced contaminant concentrations in shallow soil vapor. Since benzene, ethylbenzene, and naphthalene were not detected in any of the soil vapor samples, this media specific component of the 'Low Threat Closure Policy' appears to be satisfied.

In September 2016, Stratus conducted a post DPE subsurface investigation at the site, which consisted of conducting additional soil vapor sampling (to supplement the January 2016 data), and advancing five direct push soil borings (GP-1 through GP-5). The data showed that soil vapor concentrations onsite, near the area where DPE was performed, remain low. In September 2016, the highest concentrations of fuel contaminants in soil vapor were detected at soil vapor probes SV-6 and SV-7 (likely outside of the radius of influence of the former DPE system), with maximum levels of GRO and benzene at 77,000  $\mu\text{g}/\text{m}^3$  and 92  $\mu\text{g}/\text{m}^3$ , respectively. Borings GP-1 through GP-5 were advanced in relative close proximity to boreholes where elevated levels of fuel contaminants were detected prior to remediation. At borings GP-1 through GP-5, substantial reductions in fuel contaminant concentrations were observed when compared to historical data (although ACEHD has requested that a supplemental boring be advanced in the vicinity of GP-5, which is discussed later in this report).

CRA performed a water well survey using Department of Water Resources (DWR) well completion records obtained in 2008. At that time, no water wells were identified within a 1,000-foot radius of the site. At the request of ACEHD, Stratus conducted a door-to-door field reconnaissance (in December 2015, and again in September and October 2016) in order to attempt to identify water supply wells that are undocumented.

The following summarizes the findings of the water supply well reconnaissance and sampling activities completed to date. Table 2 presents information summarizing the findings of the water supply well survey. The locations of wells discussed below are depicted on Figure 3.

- A total of 177 residences were visited by Stratus personnel between December 2015 and October 2016, and contact was made with approximately 119 property owners/tenants. These properties are situated within approximately 1,100 feet northwest and 1,400 feet west and southwest of the site. Thirteen wells were located and eight of these wells were confirmed to be in use. At least seven additional properties may have wells, however additional information would be needed to confirm the presence of a well (see Table 2 for summarized information).

- Groundwater samples have been collected from seven properties where water wells were identified (1632 Via Barrett, 1587 Via Rancho, 1742 Via Rancho, 15857 Via Seco, 1617 Via Lacqua, 15868 Corte Ulisse, and 15772 Via Teresa) with consent of the property owner or tenant. Laboratory results for these samples were transmitted to ACEHD and the property owners in separate reports issued for each specific property. MTBE was detected in three of the samples; 57 micrograms per liter ( $\mu\text{g/L}$ ) at 1587 Via Rancho, 0.68  $\mu\text{g/L}$  at 15857 Via Seco, and 1.0  $\mu\text{g/L}$  at 1617 Via Lacqua. GRO and BTEX concentrations were below laboratory detection limits in all water well samples.
- ACEHD has requested re-sampling of the well at 1587 Via Rancho, however the owner is no longer cooperative in allowing access.
- One property owner (1408 Via Barrett) actively uses their water well but refused to allow sampling of the extracted groundwater.
- At five additional residences (15765 Via Teresa, 15779 Via Seco, 1769 Via Rancho, 1571 Via Chorro, and 15866 Corte Angelo), the owner/tenants indicated that wells were present, but were not in use. At one of these residences (15866 Corte Angelo), the owner indicated that they intended to begin using the well in the future to water trees for a small orchard in their yard (but the well pump is currently non-operational).
- At one residence (1540 Via Chorro), Stratus believes that a water well is present and in use, due to the presence of an East Bay Municipal Utility District (EBMUD) anti-siphoning device in a vault box in front of the residence, however we were unable to communicate with the owner/tenant due to a language barrier (owner/tenant only speaks an Asian language).
- At three residences (15778 Via Seco, 1794 Via Rancho, and 15854 Corte Geraldo), Stratus was informed by a neighbor or family member of the likely presence of a well, but we were unable to confirm the presence of a well.
- At three residences (1587 Via Chorro, 15753 Via Teresa, and 15850 Corte Yolanda), conflicting information regarding the possible presence of a well was observed or received.
- ACEHD mailed a fact sheet/flyer out to select residences west and southwest of the site in the spring of 2017. A list of physical addresses covering the reconnaissance area was not provided to Stratus (only a list of the mailing addresses of the property owners). Based on responses to the mailed flyers, five additional wells were identified (1601 Via Rancho, 1541 Via Escondido, 1784 Via Lacqua, 1783 Via Lacqua, and 15819 Via Nueva). ACEHD has asked that

one of these wells (1601 Via Rancho) be sampled, and the owner consented in writing to allow for sampling of the well, however, to date, the owner's tenant has not been cooperative in arranging for a time to inspect and sample the well.

Stratus has updated the focused SCM for this site using available data; this information is presented as Table 3.

## **SCOPE OF WORK**

The objectives of the implemented work scope were to:

- Evaluate current concentrations of petroleum hydrocarbons in soil, focused on areas of the site where elevated levels of fuel contaminants were detected during historical investigations.
- Further assess the extent of fuel contaminants in groundwater.

To accomplish these objectives, Stratus implemented the following work activities:

- Advanced one (1) soil boring (GP-6) to approximately 24 feet bgs using direct push methods. At the request of ACEHD, boring GP-6 was advanced approximately 2 feet from boring GP-5, in order to attempt to collect soil samples in closer proximity to former sample location T-3E-7.0.
- Advanced three (3) additional soil borings (GP-7 through GP-9) to approximately 24 feet bgs using direct push methods.
- Collected soil samples from borings GP-6 through GP-9 for lithologic comparison and chemical analysis.
- Collected two groundwater samples (at differing depths) from borings GP-8 and GP-9. Stratus collected a deeper groundwater sample from boring GP-7, however shallow groundwater did not sufficiently recharge the borehole to allow for collection of a sample at this location.

Prior to initiating site assessment activities, a drilling permit was obtained from Alameda County Public Works Agency (ACPWA). Underground Service Alert, the Jaber's, the property tenant, ACPWA, and ACEHD were notified 48 hours prior to beginning work activities. All work was conducted under the direct supervision of a State of California Registered Professional Geologist. A generalized description of the field practices and procedures utilized during the drilling work performed during this phase of investigation are described in Appendix A. A copy of the drilling permit is provided in Appendix B.

## Soil Borings

A Stratus geologist was onsite to oversee Penecore Drilling, Inc. (C-57 license no. 906899) complete the drilling activities on August 24, 2017. The soil borings were advanced using a direct push drilling rig. Soil cores were retained continuously through the length of the boring within acetate liners installed within a direct push coring device. Soil samples were collected at select intervals by cutting the acetate liners into 6-inch length segments. The ends of each sample were lined with Teflon™ sheets, capped, and sealed. Each sample was labeled, placed in a resealable plastic bag, and stored in an ice-chilled cooler. Strict chain-of-custody procedures were followed from the time the samples were collected until the time the samples were relinquished to the laboratory.

Soils were classified onsite using the Unified Soil Classification System. Boring logs detailing soil and lithologies encountered during this investigation are included in Appendix B. The boring logs were also uploaded to Geotracker (GeoBore); confirmation sheets documenting uploading of these boring logs are provided in Appendix D. Soil from each sampled interval was also field screened using a photo-ionization detector (PID); the PID readings obtained in the field are included on the soil boring logs.

Groundwater samples were collected from borings GP-8 and GP-9 at two depths (first encountered groundwater [about 18 feet bgs] and the base of the borehole [about 24 feet bgs]). Although groundwater will recharge shallow monitoring wells at a depth shallower than 18 feet bgs, recharge rates are too slow at these depths to enable sample collection by direct push methods. The deeper groundwater samples were collected using hydropunch techniques, whereas grab samples were collected from first encountered groundwater. At boring GP-7, groundwater did not recharge the borehole sufficiently to enable collection of a shallow sample. The groundwater samples were collected using a clean bailer, and transferred to laboratory supplied containers (voas preserved with hydrochloric acid). Each voa was labeled, and stored in an ice-chilled cooler prior to delivery to the analyzing laboratory. Proper chain-of-custody procedures were adhered to until the samples were delivered to a laboratory representative.

After collecting the soil and groundwater samples, each borehole was backfilled to surface grade with neat cement. The ground surface was subsequently patched to match the surrounding area.

## Analytical Methods

Soil and groundwater samples were forwarded to Alpha Analytical, Inc., a California state-certified laboratory (ELAP #2019), for chemical analysis under strict chain-of-custody procedures. The samples were analyzed for GRO using United States Environmental Protection Agency (USEPA) Method 8015C, and for BTEX and MTBE using USEPA Method SW8260B. Soil samples collected from above 4.5 or 5 feet bgs



were additionally analyzed for naphthalene and 15 other polynuclear aromatic hydrocarbons (PAHs, see laboratory report for full list) using USEPA Method 8270SIM. Table 4 presents a summary of soil analytical data, and Table 5 presents groundwater sample results. Certified analytical reports and chain-of-custody documentation are provided in Appendix C. The certified analytical report prepared by Alpha Analytical has been uploaded to the State of California's GeoTracker database; upload confirmation documentation for these lab results are included in Appendix D.

## **FINDINGS**

### **Soil Analytical Results**

Samples were retained from boring GP-6 at the same depth intervals as were collected from boring GP-5 in 2016, at the request of ACEHD. Concentrations of fuel contaminants in the GP-6 samples were lower than contaminant levels detected in boring GP-5. GRO (30 milligrams per kilogram [mg/Kg]) and benzene (0.088 mg/Kg) were detected in the sample collected from boring GP-6 at 9.5 feet bgs. MTBE was detected in the samples collected from boring GP-6 at 9.5 and 14.5 feet bgs (0.12 mg/Kg and 0.1 mg/Kg, respectively). Fuel contaminants were not detected in the samples collected from boring GP-6 at 4.5, 19.5, and 23.5 feet bgs.

Fuel contaminants were not detected in any of the samples collected from borings GP-8 or GP-9. Only MTBE (0.0081 mg/Kg) was detected at boring GP-7 (soil sample retained from 20 feet bgs). PAH's were not detected in any soil samples

### **Groundwater Analytical Results**

MTBE was detected in each of the groundwater samples collected, at concentrations of 78 µg/L (boring GP-7 at 24 feet bgs), 110 to 120 µg/L (boring GP-8), and 23 to 29 µg/L (boring GP-9). GRO was also detected in the GP-7 and GP-8 samples, at concentrations ranging from 95 µg/L to 110 µg/L. BTEX were not detected in any of the groundwater samples.

## **DISCUSSION**

Evaluating data from a combination of groundwater monitoring wells, direct push borings, and shallow water wells in the neighborhood surrounding the site appear useful for evaluating the extent of fuel contaminant impact to groundwater near the site. Figures 7 through 14 present data pertinent for assessing the lateral extent of impact to groundwater in the shallow subsurface. Although limited information regarding the construction of the shallow water wells (offsite) is available, the data appear useful for approximating the lateral limits of impact in the absence of an offsite monitoring well network.

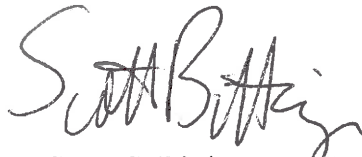
Following a review of this report, Stratus will contact the ACEHD to evaluate the next course of action regarding this environmental case.

## LIMITATIONS

This document was prepared in general accordance with accepted standards of care that existed at the time this work was performed. No other warranty, expressed or implied, is made. Conclusions and recommendations are based on field observations and data obtained from this work and previous investigations. It should be recognized that definition and evaluation of geologic conditions is a difficult and somewhat inexact science. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the subsurface conditions present. More extensive studies may be performed to reduce uncertainties. This document is solely for the use and information of our client unless otherwise noted.

If you have any questions regarding this document, or the project in general, please contact Scott Bittinger at (530) 676-2062 or Gowri Kowtha at (530) 676-6001.

Sincerely,  
*STRATUS ENVIRONMENTAL, INC.*



Scott G. Bittinger, P.G.  
Project Geologist



Gowri S. Kowtha, P.E.  
Project Manager/Principal Engineer

## ATTACHMENTS:

Table 1	Well Construction Detail Summary
Table 2	Water Supply Well Search Results
Table 3	Focused Site Conceptual Model
Table 4	Soil Analytical Results
Table 5	Groundwater Analytical Results
Figure 1	Site Location Map
Figure 2	Site Vicinity Map
Figure 3	Area Map
Figure 4	Hypothetical GRO Plume Length Based on LTCP Justification
Figure 5	Hypothetical Benzene Plume Length Based on LTCP Justification
Figure 6	Hypothetical MTBE Plume Length Based on LTCP Justification
Figure 7	Groundwater Analytical Summary, 10'-12' Depth Monitoring Wells and Shallow Direct Push Grab Samples, 3 <sup>rd</sup> Quarter 2017
Figure 8	Groundwater Analytical Summary, 20'-26' Depth Monitoring Wells and Deep Direct Push Grab Samples, 3 <sup>rd</sup> Quarter 2017
Figure 9	GRO in Groundwater, 10-12' Depth Monitoring Wells and Domestic Wells
Figure 10	Benzene in Groundwater, 10-12' Depth Monitoring Wells and Domestic Wells
Figure 11	MTBE in Groundwater, 10-12' Depth Monitoring Wells and Domestic Wells
Figure 12	GRO in Groundwater, 20-26' Depth Monitoring Wells and Domestic Wells
Figure 13	Benzene in Groundwater, 20-26' Depth Monitoring Wells and Domestic Wells
Figure 14	MTBE in Groundwater, 20-26' Depth Monitoring Wells and Domestic Wells
Appendix A	Field Practices and Procedures
Appendix B	Drilling Permit and Soil Boring Logs
Appendix C	Certified Analytical Reports and Chain-of-Custody Documentation
Appendix D	GeoTracker Data Upload Confirmation Sheets

cc: Mr. Philip Jaber  
Ms. Cherie McCaulou, RWQCB (via GeoTracker)

**TABLE 1**  
**WELL CONSTRUCTION DETAIL SUMMARY**  
Former Olympic Service Station, 1436 Grant Avenue, San Lorenzo, CA

Boring/Well I.D.	Date	Boring Depth (feet)	Boring Diameter (inches)	Well Diameter (inches)	Screen Interval (feet bgs)	Slot Size (inches)	Drilling Method	Consultant
<b>Groundwater Monitoring Wells</b>								
MW-1	09/24/99	26.5	8	2	5 - 26.5	0.020	HSA	Aqua Science Engineers
MW-2	09/24/99	20	8	2	5-20	0.020	HSA	Aqua Science Engineers
MW-3	09/24/99	21.5	8	2	5-21	0.020	HSA	Aqua Science Engineers
MW-4	02/09/10	10	10	4	5-10	0.020	Air Knife	Conestoga-Rovers & Associates
MW-5A	05/28/14	10	8	2	5-10	0.020	HSA	Stratus Environmental
MW-5B	05/28/14	20	8	2	15-20	0.020	HSA	Stratus Environmental
MW-6A	05/28/14	10	8	2	5-10	0.020	HSA	Stratus Environmental
MW-6B	05/28/14	20	8	2	15-20	0.020	HSA	Stratus Environmental
MW-7A	12/04/15	12	8	2	4-12	0.020	HSA	Stratus Environmental
MW-8A	12/04/15	12	8	2	4-12	0.020	HSA	Stratus Environmental
<b>Extraction Wells</b>								
EX-1	05/19/11	20	10	4	5-20	0.020	HSA	Stratus Environmental
EX-2	05/19/11	20	10	4	5-20	0.020	HSA	Stratus Environmental
EX-3	05/19/11	20	10	4	5-20	0.020	HSA	Stratus Environmental
EX-4	02/20/14	20	10	4	5-20	0.020	HSA	Stratus Environmental
EX-5	02/20/14	20	10	4	5-20	0.020	HSA	Stratus Environmental
EX-6	02/21/14	20	10	4	5-20	0.020	HSA	Stratus Environmental
EX-7	02/20/14	20	10	4	5-20	0.020	HSA	Stratus Environmental
<b>Injection Wells</b>								
IW-1	05/20/11	11.5	8	0.75	9.5-11.5	microporous	HSA	Stratus Environmental
IW-2	05/20/11	16	8	0.75	14-16	microporous	HSA	Stratus Environmental
<b>Soil Vapor Sampling Points</b>								
SV-1	02/12/10	5.5	3.25	0.375	5-5.1	0.002	HA	Conestoga-Rovers & Assoc.
SV-2	02/09/10	5.5	3.25	0.375	5-5.1	0.002	HA	Conestoga-Rovers & Assoc.
SV-3	02/09/10	5.5	3.25	0.375	5-5.1	0.002	HA	Conestoga-Rovers & Assoc.
SV-4	02/09/10	5.5	3.25	0.375	5-5.1	0.002	HA	Conestoga-Rovers & Assoc.
SV-5	05/20/11	5.5	3.25	0.375	5-5.1	0.002	HA	Stratus Environmental, Inc.
SV-6	12/04/15	6	2.5	0.25	5.3-5.5	mesh	HA	Stratus Environmental, Inc.
SV-7	12/04/15	6	2.5	0.25	5.3-5.5	mesh	HA	Stratus Environmental, Inc.

Notes:  
HSA = Hollow Stem Auger  
HA = Hand Auger  
Data regarding the construction of wells MW-1 through MW-4 obtained from groundwater monitoring reports prepared by Conestoga-Rovers & Associates

**Table 2**  
 Water Supply Well Search Results  
 Former Olympic Service Station  
 1436 Grant Avenue, San Lorenzo, California

Date	Address	Status
9/24/2016	15850 Corte Angelo	No Answer, house boarded up and vacant
9/24/2016	15851 Corte Angelo	No Answer
9/24/2016	15858 Corte Angelo	No Answer
9/24/2016	15859 Corte Angelo	No Well
9/24/2016	15866 Corte Angelo	Well present, but currently inactive. Owner wants to use well in future to water small orchard (4-5 fruit trees) in back yard once pump replaced (Underwood well)
9/24/2016	15867 Corte Angelo	No Well
12/16/2015	1408 Via Barrett	Well In Use. Owner refused access to sample by phone on 8/10/16 (Robinson well)
10/1/2016		Spoke to Mr. Robinson in person on 10/1/16; again refused access to sample
12/16/2015	1416 Via Barrett	No Well
12/16/2015	1417 Via Barrett	No Well
12/16/2015	1424 Via Barrett	No Well
12/16/2015	1425 Via Barrett	No Well
9/24/2016	1432 Via Barrett	Elderly owner/tenant unable to answer question about well
12/16/2015	1433 Via Barrett	No Answer
9/24/2016		No Answer
9/24/2016	1440 Via Barrett	No Well
12/16/2015	1455 Via Barrett	No Well
9/24/2016	1456 Via Barrett	Owner/tenant unable to answer question due to language barrier
12/16/2015	1464 Via Barrett	No Well
12/16/2015	1477 Via Barrett	No Answer
9/24/2016		No Answer
12/16/2015	1478 Via Barrett	No Well
12/16/2015	1484 Via Barrett	No Well
12/16/2015	1520 Via Barrett	No Well
9/24/2016	1523 Via Barrett	Tenant not aware of a well
12/16/2015	1544 Via Barrett	No Well
9/24/2016	1557 Via Barrett	No Answer
10/1/2016		No Answer
12/16/2015	1568 Via Barrett	No Answer
9/24/2016		No Answer
10/1/2016		No Answer
9/24/2016	1575 Via Barrett	No Well
9/24/2016	1582 Via Barrett	No Answer
10/1/2016		No Answer
9/24/2016	1590 Via Barrett	No Well
9/24/2016	1604 Via Barrett	No Well
9/24/2016	1618 Via Barrett	No Answer
10/1/2016	1632 Via Barrett	Well in use and sampled with permission of tenant; sample absent of fuel contaminants
9/24/2016	1625 Via Barrett	No Well
9/24/2016	1639 Via Barrett	Empty house, construction workers didn't know about well
9/24/2016	1646 Via Barrett	No Well
10/1/2016	1540 Via Chorro	Owner/tenant unable to answer question due to language barrier, likely well present, 2 EBMUD vaults
9/24/2016	1554 Via Chorro	No Answer
10/1/2016		No Answer
10/1/2016	1555 Via Chorro	No Well
9/24/2016	1570 Via Chorro	No Answer
10/1/2016		No Answer
9/24/2016	1571 Via Chorro	Water well present, owner indicates not used in their 30 years living there
10/1/2016	1587 Via Chorro	May have well because neighbor's father supposedly helped install well here, however owner/tenant indicates no well present, and only one EBMUD vault observed at street
9/24/2016	1603 Via Chorro	No Answer
9/24/2016	1619 Via Chorro	No Well
9/24/2016	1635 Via Chorro	No Answer
12/16/2015	15752 Via Esmond	No Answer
12/16/2015	15755 Via Esmond	No Answer
12/16/2015	15758 Via Esmond	No Well

**Table 2**  
 Water Supply Well Search Results  
 Former Olympic Service Station  
 1436 Grant Avenue, San Lorenzo, California

Date	Address	Status
12/16/2015	15761 Via Esmond	No Answer
12/16/2015	15764 Via Esmond	No Well
12/16/2015	15767 Via Esmond	No Well
12/16/2015	15770 Via Esmond	No Answer
12/16/2015	15773 Via Esmond	No Well
12/16/2015	15776 Via Esmond	No Answer
12/16/2015	15782 Via Esmond	No Well
12/16/2015	15788 Via Esmond	No Answer
10/1/2016	15854 Corte Geraldo	No Answer, neighbor at 15862 Corte Geraldo indicates that well is present
10/1/2016	15855 Corte Geraldo	Owner/tenant unable to answer question due to language barrier
10/1/2016	15862 Corte Geraldo	No Well
10/1/2016	15863 Corte Geraldo	No Well
10/1/2016	15871 Corte Geraldo	No Well
10/1/2016	1482 Via Lacqua	No Well
12/16/2015	1521 Via Lacqua	No Well
12/16/2015	1522 Via Lacqua	No Well
12/16/2015	1543 Via Lacqua	No Well
12/16/2015	1544 Via Lacqua	No Well
12/16/2015	1565 Via Lacqua	No Well
12/16/2015	1589 Via Lacqua	No Answer
10/1/2016	1603 Via Lacqua	No Answer
10/1/2016	1617 Via Lacqua	Well in Use, sampled 10/1/16; MTBE detected at 1.0 ug/L (Mangini Well)
10/1/2016	1618 Via Lacqua	No Answer
10/1/2016	1631 Via Lacqua	No Answer
10/1/2016	1632 Via Lacqua	No Answer
10/1/2016	1645 Via Lacqua	No Well
10/1/2016	1661 Via Lacqua	No Well
10/1/2016	1669 Via Lacqua	No Answer
9/24/2016	1670 Via Lacqua	No Well
10/1/2016	1677 Via Lacqua	No Well
9/24/2016	1678 Via Lacqua	No Well
10/1/2016	1685 Via Lacqua	No Well
10/1/2016	1693 Via Lacqua	No Well
10/1/2016	1705 Via Lacqua	No Well
10/1/2016	1717 Via Lacqua	Owner/tenant unable to answer question due to language barrier
10/1/2016	1722 Via Lacqua	No Answer
10/1/2016	1729 Via Lacqua	Tenant not aware of a well
10/1/2016	1737 Via Lacqua	No Answer
10/1/2016	1738 Via Lacqua	No Answer
10/1/2016	1745 Via Lacqua	No Well
10/1/2016	1757 Via Lacqua	Mental capacity of owner/tenant not sufficient to answer question about well
10/1/2016	1771 Via Lacqua	No Answer
Spring 2017	1783 Via Lacqua	Water well present (owner responded by flyer); well not used during 39 years of ownership
Spring 2017	1784 Via Lacqua	Water well present (owner responded by flyer); no information regarding use provided
12/16/2015	1503 Via Rancho	No Well
9/24/2016	1504 Via Rancho	No Well
12/16/2015	1517 Via Rancho	No Well
12/16/2015	1518 Via Rancho	No Well
12/16/2015	1531 Via Rancho	No Well
12/16/2015	1532 Via Rancho	No Answer
9/24/2016		No Answer
12/16/2015	1545 Via Rancho	No Answer
9/24/2016		No Answer
10/1/2016		Resident home, but refused to answer door
12/16/2015	1546 Via Rancho	No Answer
9/24/2016		No Answer
10/1/2016		Resident home, but refused to answer door

**Table 2**  
**Water Supply Well Search Results**  
**Former Olympic Service Station**  
**1436 Grant Avenue, San Lorenzo, California**

Date	Address	Status
12/16/2015	1559 Via Rancho	No Well
12/16/2015	1560 Via Rancho	No Well
12/16/2015	1573 Via Rancho	No Well
9/24/2016	1574 Via Rancho	Owner/tenant wasn't sure
12/16/2015	1587 Via Rancho	Well In Use: sample impacted with MTBE at 57 ug/L (DeCero well)
9/24/2016	1588 Via Rancho	No Well
Spring 2017	1601 Via Rancho	Water well present, owner/tenant indicates well not in use (responded by flyer) Owner gave permission to sample well, but haven't been able to arrange sampling with tenant
10/1/2016		No Answer
9/24/2016	1602 Via Rancho	No Answer
10/1/2016		No Answer
9/24/2016	1615 Via Rancho	No Answer
10/1/2016		No Answer
9/24/2016	1616 Via Rancho	No Answer
10/1/2016		Spoke to housekeeper only, unable to answer question about well
9/24/2016	1629 Via Rancho	No Well
10/1/2016	1630 Via Rancho	Owner/tenant did not believe that a well is present
10/1/2016	1643 Via Rancho	No Well
9/24/2016	1644 Via Rancho	No Well
9/24/2016	1657 Via Rancho	No Answer
10/1/2016		No Answer
9/24/2016	1658 Via Rancho	No Well
9/24/2016	1671 Via Rancho	No Answer
10/1/2016		No Answer
10/1/2016	1672 Via Rancho	No Well
9/24/2016	1685 Via Rancho	No Answer
9/24/2016	1686 Via Rancho	Owner/tenant wasn't sure
9/24/2016	1700 Via Rancho	No Well
9/24/2016	1701 Via Rancho	No Answer
9/24/2016	1714 Via Rancho	No Well
9/24/2016	1715 Via Rancho	No Answer
9/24/2016	1728 Via Rancho	No Answer
9/24/2016	1741 Via Rancho	No Well
9/24/2016	1742 Via Rancho	Well in use and sampled with permission of tenant; sample absent of fuel contaminants
9/24/2016	1755 Via Rancho	No Answer
9/24/2016	1756 Via Rancho	No Answer
9/24/2016	1769 Via Rancho	Water well present, but reportedly dry
9/24/2016	1770 Via Rancho	Owner/tenant not aware of any well
9/24/2016	1781 Via Rancho	No Well
9/24/2016	1782 Via Rancho	No Well
9/24/2016	1793 Via Rancho	No Well according to neighbor (house vacant)
9/24/2016	1794 Via Rancho	No Answer, neighbor indicates well present
10/1/2016		No Answer, neighbor indicates well present
10/1/2016	15762 Via Seco	No Well
10/1/2016	15763 Via Seco	No Answer
10/1/2016	15770 Via Seco	No Answer
10/1/2016	15771 Via Seco	No Well
10/1/2016	15778 Via Seco	Granddaughter (25-30 yr old) believes well present, but needed to ask her grandparents (owners)
10/1/2016	15779 Via Seco	Water well present, 2 EBMUD vaults, owner indicates hasn't been used in 15 years & inaccessible
12/16/2015	15786 Via Seco	No Well
12/16/2015	15787 Via Seco	No Well
12/16/2015	15794 Via Seco	No Answer
10/1/2016		No Answer
12/16/2015	15800 Via Seco	No Well
12/16/2015	15801 Via Seco	No Well
12/16/2015	15816 Via Seco	No Well
12/16/2015	15824 Via Seco	No Well

**Table 2**  
**Water Supply Well Search Results**  
**Former Olympic Service Station**  
**1436 Grant Avenue, San Lorenzo, California**

Date	Address	Status
12/16/2015	15825 Via Seco	No Well
12/16/2015	15832 Via Seco	No Well
12/16/2015	15835 Via Seco	No Well
12/16/2015	15848 Via Seco	No Answer
10/1/2016		No Answer
10/1/2016	15849 Via Seco	No Well
12/16/2015	15850 Via Seco	No Well
12/16/2015	15856 Via Seco	No Well
12/16/2015	15857 Via Seco	Well In Use: sample impacted with MTBE at 0.68 ug/L (Hatcher well)
12/16/2015	15864 Via Seco	No Well
12/16/2015	15865 Via Seco	No Well
9/24/2016	15753 Via Teresa	Owner/tenant indicates no well present, but 2 EBMUD vaults observed at street
9/24/2016	15756 Via Teresa	No Well
9/24/2016	15764 Via Teresa	No Well
9/24/2016	15765 Via Teresa	Water well present, owner/tenant indicates well buried and not in use
9/24/2016	15772 Via Teresa	Well in use; absent of fuel contaminants (Johnson well)
9/24/2016	15773 Via Teresa	No known well (didn't think they had one)
9/24/2016	15780 Via Teresa	No Well
9/24/2016	15781 Via Teresa	No Answer
12/16/2015	15788 Via Teresa	No Well
9/24/2016	15789 Via Teresa	No Well
9/24/2016	15852 Corte Ulisse	No Well
9/24/2016	15853 Corte Ulisse	No Well
9/24/2016	15860 Corte Ulisse	No Answer
9/24/2016	15861 Corte Ulisse	No Well
9/24/2016	15868 Corte Ulisse	Well in use: absent of fuel contaminants (Bratton well)
9/24/2016	15869 Corte Ulisse	No Answer
10/1/2016	15850 Corte Yolanda	Owner/tenant indicates no well present, but owner at 1617 Lacqua indicates there is a well here and owner/tenant is lying about not having one
10/1/2016	15851 Corte Yolanda	No Answer
10/1/2016	15858 Corte Yolanda	No Answer
10/1/2016	15859 Corte Yolanda	No Answer
10/1/2016	15866 Corte Yolanda	No Answer
10/1/2016	15867 Corte Yolanda	No Answer
Spring 2017	1541 Via Escondido	Water well present, apparently operational but rarely used. Drilled to 40', but collapsed to 25' (responded by flyer)
Spring 2017	15819 Via Nueva	Water well present, but never used. Depth 15' (responded by flyer)



**Table 3  
Focused Site Conceptual Model**

SCM Element	SCM Sub-Element	Description	Data Gap Item #	Resolution
Geology and Hydrogeology	Site	Silt/clay mixtures predominately observed to depths ranging from about 15 to 25 feet bgs, except in areas of overexcavation. Some sandy stratum observed near surface grade extending a few feet in depth (likely fill). Below the 15 to 25 foot level, silty sand and clayey sand have been observed. The thickness of these sandy strata is unknown. Most contaminant impact appears to be present within fine grained silt/clay soils. Historically, groundwater levels in the monitoring wells have ranged from approximately 5 to 8.5 feet bgs with only minimal seasonal fluctuation. Groundwater flow is predominately towards the southwest and west-southwest at a low gradient.	None	N/A
Geology and Hydrogeology	Regional	The site is situated on the East Bay Plain, at an elevation of approximately 15 to 18 feet above mean sea level. The East Bay Plain slopes gently from East to West. The base of the San Leandro Hills are situated approximately 3 miles to the east. Regional groundwater in the area also flows from east to west, following surface water drainage patterns.	None	N/A
Surface Water Bodies		The closest surface water body to the site is San Lorenzo Creek, which is located approximately 1,000 to 1,500 feet north-northwest of the site (San Lorenzo Creek is concrete lined). The property is located approximately 7,000 feet northeast of San Francisco Bay.	None	N/A
Nearby Water Wells		No water wells within 1,000 feet of the site are on file with the Department of Water Resources. A canvas of the neighborhood west, northwest, and southwest, and a flyer mailout by ACEHD has identified 18 previously undocumented water wells, at least 8 of which are still in use. It is likely that more undocumented water wells have yet to be identified. Seven water wells have been sampled, and three samples were impacted with MTBE. One well was impacted at 57 µg/L; the other two wells were impacted at 1 µg/L or less.	None	N/A

**Table 3  
Focused Site Conceptual Model (Continued)**

SCM Element	SCM Sub-Element	Description	Data Gap Item #	Resolution
Release Source and Volume		<p>Two gasoline USTs, a diesel UST, a waste oil UST, six fuel dispensers, and associated fuel product lines were removed in July 1998. Compliance soil samples confirmed the presence of a petroleum hydrocarbon release to the subsurface.</p> <p>Several phases of assessment were completed in order to investigate the release. In a September 2012 Corrective Action Plan, Stratus compiled the available data and calculated the estimated fuel contaminant mass. In these calculations, Stratus estimated that 955 pounds of GRO, 5.32 pounds of benzene, and 8.71 pounds of MTBE were present in soil beneath the site. Using available groundwater analytical data from 2012, Stratus estimated that approximately 2.5 pounds of GRO, 0.13 pounds of benzene, and 0.98 pounds of MTBE were dissolved in groundwater beneath the site.</p>	None	N/A
LNAPL		No free product is present at the site.	None	N/A
Source Removal Activities	Over-excavation	In 1998, soil was overexcavated in the vicinity of the waste oil UST and the southern fuel dispenser island. The waste oil UST pit was expanded from 8 to 12 feet bgs. The fuel dispenser excavation extended to about 3.5 feet bgs.	None	N/A
	DPE	Dual phase extraction (DPE) was performed between July 2014 and December 2015, removing an estimated mass of 983 pounds of GRO in the vapor phase. DPE significantly reduced concentrations of fuel contaminants in soil vapor, soil, and groundwater onsite, based on available data.	None	N/A
Contaminants of Concern		Based on historical soil investigations and groundwater monitoring events conducted at the site, diesel range organics (DRO), gasoline range organics (GRO), benzene, toluene, ethyl-benzene, total xylenes (collectively BTEX), and methyl tertiary butyl ether (MTBE), are the contaminants of concern. Analyzing groundwater for DRO is no longer performed.	None	N/A

SCM Element	SCM Sub-Element	Description	Data Gap Item #	Resolution
Petroleum Hydrocarbons in Soil		<p>Most soil analytical data was collected prior to initiating DPE, and thus is not current. Historically, most (over 95%) of fuel contaminant mass in soil was calculated to be present above 15 feet bgs, or within about 6 to 7 feet of the historical low groundwater level. Most fuel contaminant mass in soil appears to be onsite. Pre-DPE iso-concentration contour maps for soil were presented in the September 2012 CAP.</p> <p>Two direct push investigations have been conducted to evaluate concentrations of contaminants in soil. Data shows significant reductions in concentrations, likely as a result of DPE.</p>	None	N/A
Petroleum Hydrocarbons in Groundwater		<p>Five wells (MW-4, and MW-5A through MW-8A) extend to only 10 to 12 feet bgs (typically 2-6 feet below static groundwater) and the other wells extend to depths of 20 to 26 feet bgs. In July 2017, GRO, benzene, and MTBE was detected at maximum concentrations of 850 µg/L, 170 µg/L, and 2.3 µg/L, respectively, for the shallow monitoring well network. In the deeper wells, GRO and MTBE were reported at maximum levels of 84 µg/L, and 130 µg/L, respectively. Benzene was not detected in any of the deeper well samples collected in July 2017.</p> <p>The lateral extent of impact is not fully constrained by the site's monitoring well network. A sample from a water well at 1742 Via Rancho may laterally delineate the contaminant plume west-southwest of the water well at 1587 Via Rancho, where MTBE was detected at 57 µg/L.</p> <p>North of the site, a busy roadway strongly inhibits site assessment. Stratus attempted to find a suitable well location in the median/left turn lane of Grant Avenue in the summer of 2014, but underground utility corridors inhibited installation. It is our understanding that ACEHD deems wells installed on the northern shoulder of Grant Avenue to be 'too far away'. All water wells sampled to the north of Grant Avenue have been absent of fuel contaminants.</p>	Adequately Assessed, if water well sampling data used in conjunction with monitoring well and grab groundwater data	N/A

SCM Element	SCM Sub-Element	Description	Data Gap Item #	Resolution
		<p>At the request of ACEHD, Stratus has prepared figures that superimpose the State Water Resources Control Board's Technical Criteria Groundwater Media Specific criteria for GRO, benzene, and MTBE plume lengths to an area map of the site vicinity. Based on historical groundwater flow direction computation data, and available analytical results, the plume(s) are assumed to have predominately migrated to the west and southwest (see Figures 4 through 6 for GRO, benzene, and MTBE, respectively).</p>		
<p>Petroleum Hydrocarbons in Soil Vapor</p>		<p>Since the site is not an active gas station, it is not exempt from soil gas survey requirements. In February 2010, relatively high concentrations of petroleum hydrocarbons in soil gas were detected. At four sampling locations (SV-1 through SV-4, GRO concentrations ranged from 36,000,000 to 52,000,000 micrograms per cubic meter, and benzene concentrations ranged from 18,000 to 160,000 micrograms per cubic meter. These concentrations were well above Environmental Screening Levels established by the California Regional Water Quality Control Board.</p> <p>Post DPE soil vapor sampling was completed in January and September 2016. The data show substantial reductions in soil vapor concentrations onsite. In SV-1, SV-2, SV-4, and SV-5, GRO and benzene concentrations in soil vapor were below laboratory detection limits for 2016 samples. GRO was detected in SV-6 and SV-7 (near the strip mall west of the site), at a maximum concentration of 77,000 micrograms per cubic meter. Benzene was detected at SV-6, at 92 micrograms per cubic meter.</p>	<p>None</p>	<p>N/A</p>
<p>Risk Evaluation</p>		<p>The site is a currently used as an auto repair business. The property is located in a mixed residential and commercial neighborhood. The auto repair business is part of a larger shopping center complex. Behind the shopping center, downgradient of the site, is a residential neighborhood.</p>	<p>None</p>	<p>N/A</p>

SCM Element	SCM Sub-Element	Description	Data Gap Item #	Resolution
		<p>Based on historical depth to groundwater data, subgrade utility trenches could potentially function as conduits for preferential contaminant migration. In particular, large diameter storm drain conduits are situated beneath the Grant Avenue right-of-way. Conestoga Rovers Associates also has stated that sewer lines in Grant Avenue are also a preferential pathway for contaminant migration. Proper personal protective equipment should be used if excavation work is performed near the site.</p>		

**TABLE 4**  
**SOIL ANALYTICAL RESULTS**  
Former Olympic Gas Service Station  
1436 Grant Avenue, San Lorenzo, California

Sample ID	Sample Depth (feet bgs)	Date Collected	GRO (mg/Kg)	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Total Xylenes (mg/Kg)	MTBE (mg/Kg)	Naphthalene (mg/Kg)	PAH's (mg/Kg)
<b><u>Boring GP-6</u></b>										
GP-6-4.5	4.5	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.04	ND
GP-6-9.5	9.5	8/24/2017	<b>30</b>	<b>0.088</b>	<0.01*	<b>0.87</b>	<0.01*	<b>0.12</b>	<0.08*	NA
GP-6-14.5	14.5	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<b>0.1</b>	NA	NA
GP-6-19.5	19.5	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA
GP-6-23.5	23.5	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA
<b><u>Boring GP-7</u></b>										
GP-7-5	5	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.04	ND
GP-7-10	10	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.04	NA
GP-7-20	20	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<b>0.0081</b>	NA	NA
<b><u>Boring GP-8</u></b>										
GP-8-5	5	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.04	ND
GP-8-10	10	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.04	NA
GP-8-20	20	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA
<b><u>Boring GP-9</u></b>										
GP-9-5	5	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.04	ND
GP-9-10	10	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	<0.04	NA
GP-9-20	20	8/24/2017	<1.0	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA

**Explanation**

GRO = Gasoline range organics  
BTEX = Benzene, toluene, ethylbenzene, and xylenes  
MTBE = Methyl tertiary butyl ether  
PAH's = Polynuclear aromatic hydrocarbons  
(includes analysis for 15 compounds besides naphthalene;  
see lab report for list)  
NA = Not analyzed  
ND = Not detected, at various reporting limits  
bgs = below ground surface  
mg/Kg = milligrams per kilogram  
\* = Reporting limits increased due to high concentrations of target analytes

**Analytical Methods**

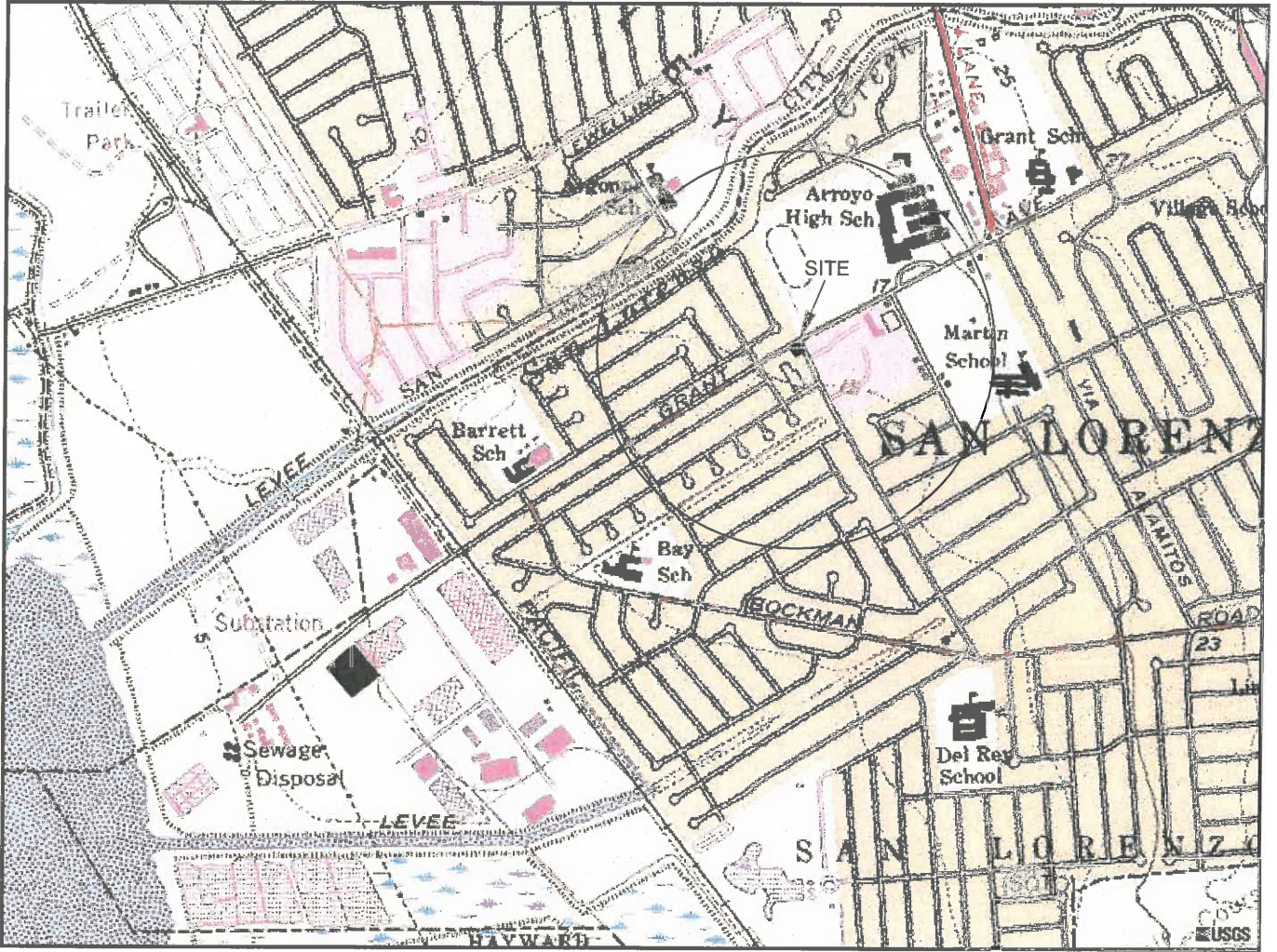
GRO analyzed using EPA Method 8015C  
BTEX, MTBE and Naphthalene analyzed using EPA Method 8260B  
PAH's analyzed using EPA Method 8270SIM

**Analytical Laboratory**

Alpha Analytical, Inc. (ELAP #2019)

**TABLE 5**  
**GROUNDWATER ANALYTICAL RESULTS**  
Former Olympic Gas Service Station  
1436 Grant Avenue, San Lorenzo, California

Sample ID	Sample Depth (feet bgs)	Date Collected	GRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (mg/L)
<b><u>Boring GP-7</u></b>								
GP-7-24	24	08/24/17	95	<0.50	<0.50	<0.50	<0.50	78
<b><u>Boring GP-8</u></b>								
GP-8-18	18	08/24/17	100	<0.50	<0.50	<0.50	<0.50	120
GP-8-24	24	08/24/17	110	<0.50	<0.50	<0.50	<0.50	110
<b><u>Boring GP-9</u></b>								
GP-9-18	18	08/24/17	<50	<0.50	<0.50	<0.50	<0.50	29
GP-9-24	24	08/24/17	<50	<0.50	<0.50	<0.50	<0.50	23
<b><u>Notes:</u></b> GRO = Gasoline Range Organics MTBE = Methyl tertiary butyl ether µg/L = Micrograms per liter (parts per billion) bgs = Below Ground Surface								
<b><u>Analyzing Laboratory</u></b> Alpha Analytical, Inc. (ELAP #2019)								
<b><u>Laboratory Methods</u></b> GRO Analyzed using EPA Method 8015C Benzene, toluene, ethylbenzene and total xylenes analyzed using EPA Method 8260B								



GENERAL NOTES:  
 BASE MAP FROM U.S.G.S.  
 SAN LORENZO, CA.  
 7.5 MINUTE TOPOGRAPHIC  
 PHOTOREVISED 1978



QUADRANGLE LOCATION



APPROXIMATE SCALE



**STRATUS**  
 ENVIRONMENTAL, INC.

FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA

FIGURE

1

PROJECT NO.  
 2115-1436-01

SITE LOCATION MAP







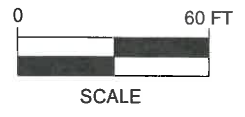
- LEGEND
- MW-1 MONITORING WELL LOCATION
  - SV-1 SOIL VAPOR PROBE LOCATION
  - EX-1 EXTRACTION WELL LOCATION
  - ⊕ IW-1 OZONE INJECTION WELL LOCATION
  - B-1 SOIL BORING LOCATION
  - △ GP-1 APPROXIMATE SOIL BORING LOCATION
  - ⊙ GP-7 APPROXIMATE DIRECT PUSH BORING LOCATION



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.



PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: August 23, 2016  
 FILENAME: Olympic Siteplan









FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 SITE VICINITY MAP

FIGURE  
 2  
 PROJECT NO.  
 2115-1436-01

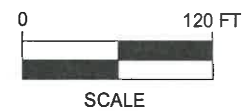


**LEGEND:**

- |   |  |   |   |   |  |
|---|--|---|---|---|--|
|  | ACTIVE WELL, OWNER REFUSED TO ALLOW SAMPLING   |  | WELL PRESENT, BUT INACTIVE FOR A LONG TIME      |  | CONFLICTING INFORMATION ABOUT PRESENCE OF WELL |
|  | ACTIVE WELL, SAMPLED WITH OWNER/TENANT CONSENT |  | WELL SUSPECTED, BUT NOT CONFIRMED TO BE PRESENT |  | WELL PRESENT, USE UNKNOWN                      |



PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: May 12, 2017  
 FILENAME: Olympic Siteplan












FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 AREA MAP

FIGURE  
**3**  
 PROJECT NO.  
 2115-1436-01



**LEGEND:**

- |   |  |   |   |   |  |
|---|--|---|---|---|--|
|  | ACTIVE WELL, OWNER REFUSED TO ALLOW SAMPLING   |  | WELL SUSPECTED, BUT NOT CONFIRMED TO BE PRESENT |  | AVERAGE PLUME LENGTH (100 µg/L), BASED ON SWRCP LTCP GUIDELINES  |
|  | ACTIVE WELL, SAMPLED WITH OWNER/TENANT CONSENT |  | CONFLICTING INFORMATION ABOUT PRESENCE OF WELL  |  | 90TH PERCENTILE PLUME (100 µg/L), BASED ON SWRCP LTCP GUIDELINES |
|  | WELL PRESENT, BUT INACTIVE FOR A LONG TIME     |  | WELL PRESENT, USE UNKNOWN                       |  | MAXIMUM PLUME LENGTH (100 µg/L), BASED ON SWRCP LTCP GUIDELINES  |

PREDOMINANT GW FLOW DIRECTION



PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 02, 2017  
 FILENAME: Olympic Potential Plume Limits



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA

HYPOTHETICAL GRO PLUME LENGTH  
 BASED ON LTCP JUSTIFICATION

FIGURE  
**4**  
 PROJECT NO.  
 2115-1436-01



**LEGEND:**

- |  |  |  |   |  |  |
|--|--|--|---|--|--|
|  | ACTIVE WELL, OWNER REFUSED TO ALLOW SAMPLING   |  | WELL SUSPECTED, BUT NOT CONFIRMED TO BE PRESENT |  | AVERAGE PLUME LENGTH (5 µg/L), BASED ON SWRCP LTCP GUIDELINES  |
|  | ACTIVE WELL, SAMPLED WITH OWNER/TENANT CONSENT |  | CONFLICTING INFORMATION ABOUT PRESENCE OF WELL  |  | 90TH PERCENTILE PLUME (5 µg/L), BASED ON SWRCP LTCP GUIDELINES |
|  | WELL PRESENT, BUT INACTIVE FOR A LONG TIME     |  | WELL PRESENT, USE UNKNOWN                       |  | MAXIMUM PLUME LENGTH (5 µg/L), BASED ON SWRCP LTCP GUIDELINES  |

PREDOMINANT GW FLOW DIRECTION



**STRATUS**  
ENVIRONMENTAL, INC.

PATH NAME: Olympic  
DRAFTER INITIALS: DMG  
DATE LAST REVISED: October 02, 2017  
FILENAME: Olympic Potential Plume Limits



FORMER OLYMPIC SERVICE STATION  
1436 GRANT AVENUE  
SAN LORENZO, CALIFORNIA  
  
HYPOTHETICAL BENZENE PLUME LENGTH  
BASED ON LTCP JUSTIFICATION

FIGURE  
**5**  
PROJECT NO.  
2115-1436-01

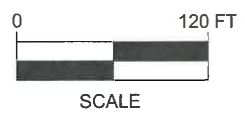


**LEGEND:**

- |  |   |  |             |                                   |
|--|---|--|-------------|-----------------------------------|
| ACTIVE WELL, OWNER REFUSED TO ALLOW SAMPLING   | WELL SUSPECTED, BUT NOT CONFIRMED TO BE PRESENT | AVERAGE PLUME LENGTH (5 µg/L), BASED ON SWRCP LTCP GUIDELINES  | = < 0.5 PPB | <br>PREDOMINANT GW FLOW DIRECTION |
| ACTIVE WELL, SAMPLED WITH OWNER/TENANT CONSENT | CONFLICTING INFORMATION ABOUT PRESENCE OF WELL  | 90TH PERCENTILE PLUME (5 µg/L), BASED ON SWRCP LTCP GUIDELINES | = > 5.0 PPB |                                   |
| WELL PRESENT, BUT INACTIVE FOR A LONG TIME     | WELL PRESENT, USE UNKNOWN                       | MAXIMUM PLUME LENGTH (5 µg/L), BASED ON SWRCP LTCP GUIDELINES  | = < 5.0 PPB |                                   |



PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 02, 2017  
 FILENAME: Olympic Potential Plume Limits



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA

HYPOTHETICAL MTBE PLUME LENGTH  
 BASED ON LTCP JUSTIFICATION

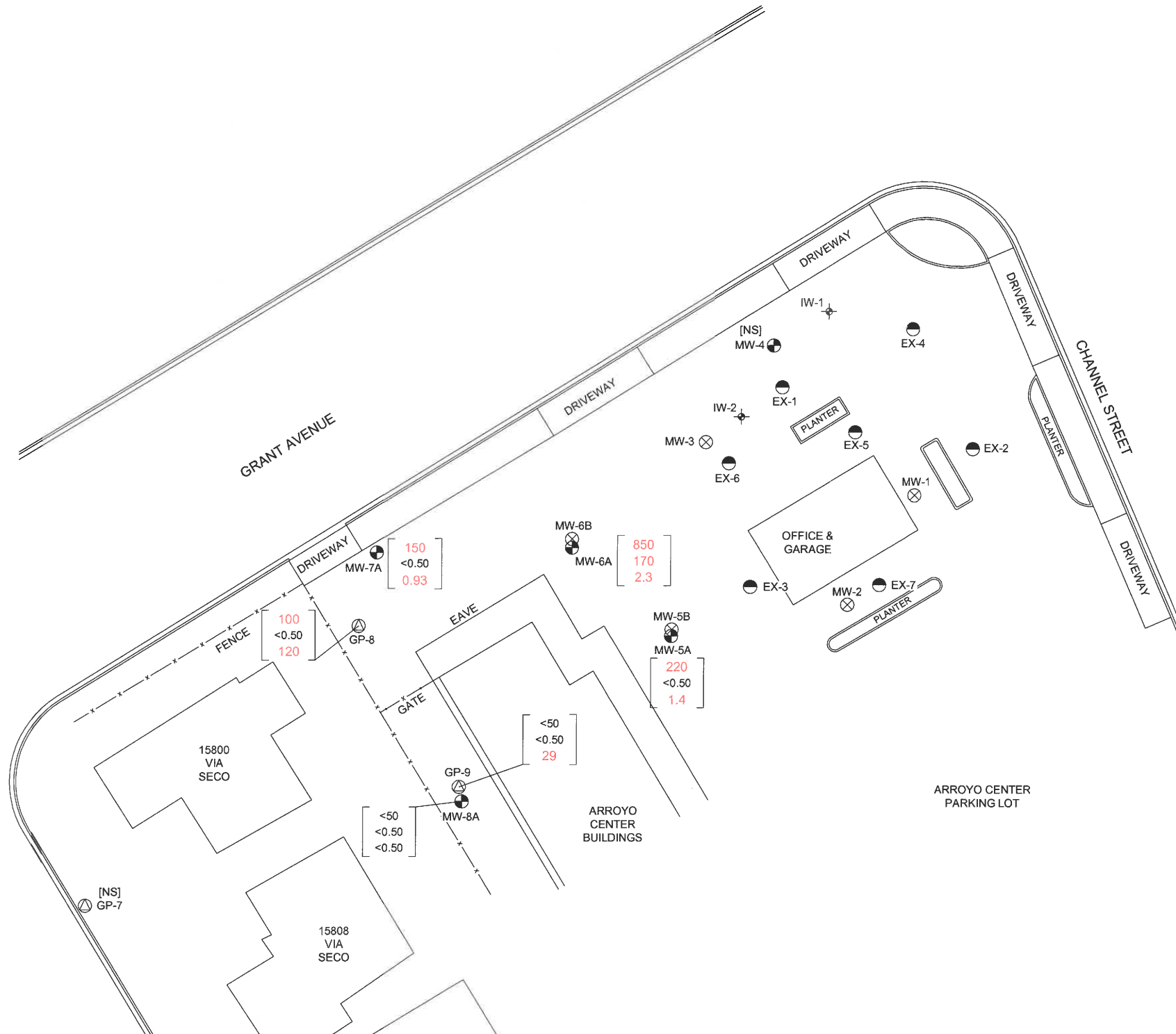
FIGURE  
**6**  
 PROJECT NO.  
 2115-1436-01



LEGEND

- MW-1 SHALLOW MONITORING WELL LOCATION
  - MW-1 DEEP MONITORING WELL LOCATION
  - EX-1 EXTRACTION WELL LOCATION
  - GP-7 APPROXIMATE GEOPROBE LOCATION
  - IW-1 OZONE INJECTION WELL LOCATION
- |     |  |
|-----|--|
| 460 | GASOLINE RANGE ORGANICS (GRO) CONCENTRATION IN $\mu\text{g/L}$ |
| 33  | BENZENE CONCENTRATION IN $\mu\text{g/L}$                       |
| 730 | METHYL TERTIARY BUTYL ETHER (MTBE) IN $\mu\text{g/L}$          |

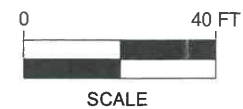
WELLS SAMPLED ON 07/17/17  
 GRAB SAMPLES COLLECTED ON 08/24/17  
 [NS] = NOT SAMPLED  
 GRO ANALYZED BY EPA METHOD 8015C  
 MTBE & BENZENE ANALYZED BY EPA METHOD 8260B



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.

**STRATUS**  
ENVIRONMENTAL, INC.

PATH NAME: OlympicQuarterly  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 02, 2017  
 FILENAME: Olympic Quarterly Figures



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 GROUNDWATER ANALYTICAL SUMMARY 10' - 12' DEPTH  
 MONITORING WELLS & SHALLOW DIRECT PUSH GRAB SAMPLES  
 3rd QUARTER 2017

FIGURE  
**7**  
 PROJECT NO.  
 2115-1436-01



LEGEND

- MW-1 SHALLOW MONITORING WELL LOCATION
  - MW-1 DEEP MONITORING WELL LOCATION
  - EX-1 EXTRACTION WELL LOCATION
  - GP-7 APPROXIMATE GEOPROBE LOCATION
  - IW-1 OZONE INJECTION WELL LOCATION
- |       |   |
|-------|---|
| 68    | GASOLINE RANGE ORGANICS (GRO) CONCENTRATION IN µg/L |
| <0.50 | BENZENE CONCENTRATION IN µg/L                       |
| 120   | METHYL TERTIARY BUTYL ETHER (MTBE) IN µg/L          |

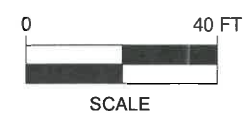
WELLS SAMPLED ON 07/17/17  
 GRAB SAMPLES COLLECTED ON 08/24/17  
 [NS] = NOT SAMPLED  
 GRO ANALYZED BY EPA METHOD 8015C  
 MTBE & BENZENE ANALYZED BY EPA METHOD 8260B



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.








PATH NAME: Olympic/Quarterly  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 02, 2017  
 FILENAME: Olympic Quarterly Figures



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 GROUNDWATER ANALYTICAL SUMMARY 20' - 26' DEPTH  
 MONITORING WELLS & DEEP DIRECT PUSH GRAB SAMPLES  
 3rd QUARTER 2017

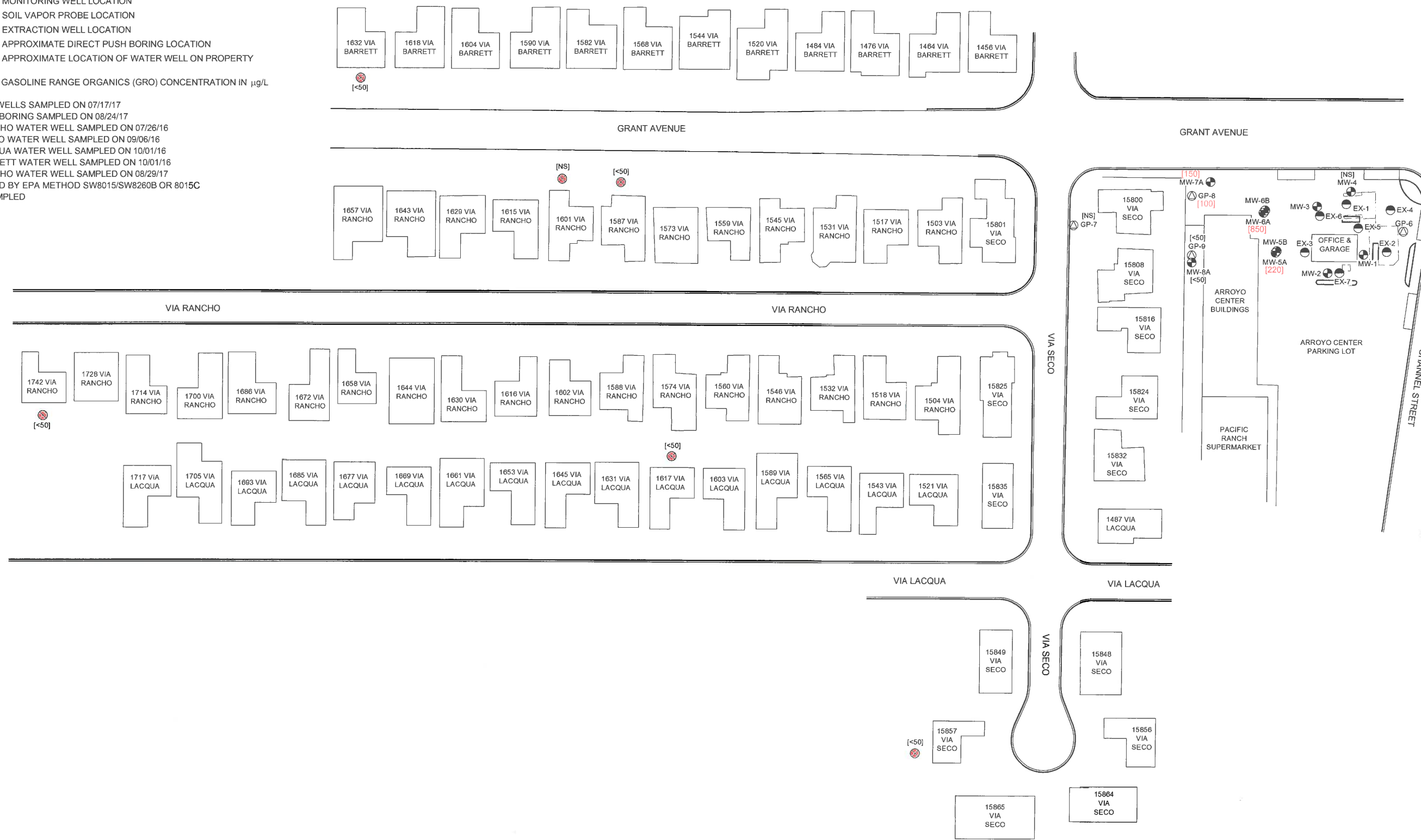
FIGURE  
**8**  
 PROJECT NO.  
 2115-1436-01

LEGEND

-  MW-1 MONITORING WELL LOCATION
-  SV-1 SOIL VAPOR PROBE LOCATION
-  EX-1 EXTRACTION WELL LOCATION
-  GP-7 APPROXIMATE DIRECT PUSH BORING LOCATION
-  APPROXIMATE LOCATION OF WATER WELL ON PROPERTY

[460] GASOLINE RANGE ORGANICS (GRO) CONCENTRATION IN  $\mu\text{g/L}$

MONITORING WELLS SAMPLED ON 07/17/17  
 DIRECT PUSH BORING SAMPLED ON 08/24/17  
 1587 VIA RANCHO WATER WELL SAMPLED ON 07/26/16  
 15857 VIA SECO WATER WELL SAMPLED ON 09/06/16  
 1617 VIA LACQUA WATER WELL SAMPLED ON 10/01/16  
 1632 VIA BARRETT WATER WELL SAMPLED ON 10/01/16  
 1742 VIA RANCHO WATER WELL SAMPLED ON 08/29/17  
 GRO ANALYZED BY EPA METHOD SW8015/SW8260B OR 8015C  
 [NS] = NOT SAMPLED



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.



PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 03, 2017  
 FILENAME: Olympic Nlso Cons








FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 GRO IN GROUNDWATER, 10'-12' DEPTH  
 MONITORING WELLS & DOMESTIC WELLS

FIGURE  
 9  
 PROJECT NO.  
 2115-1436-01

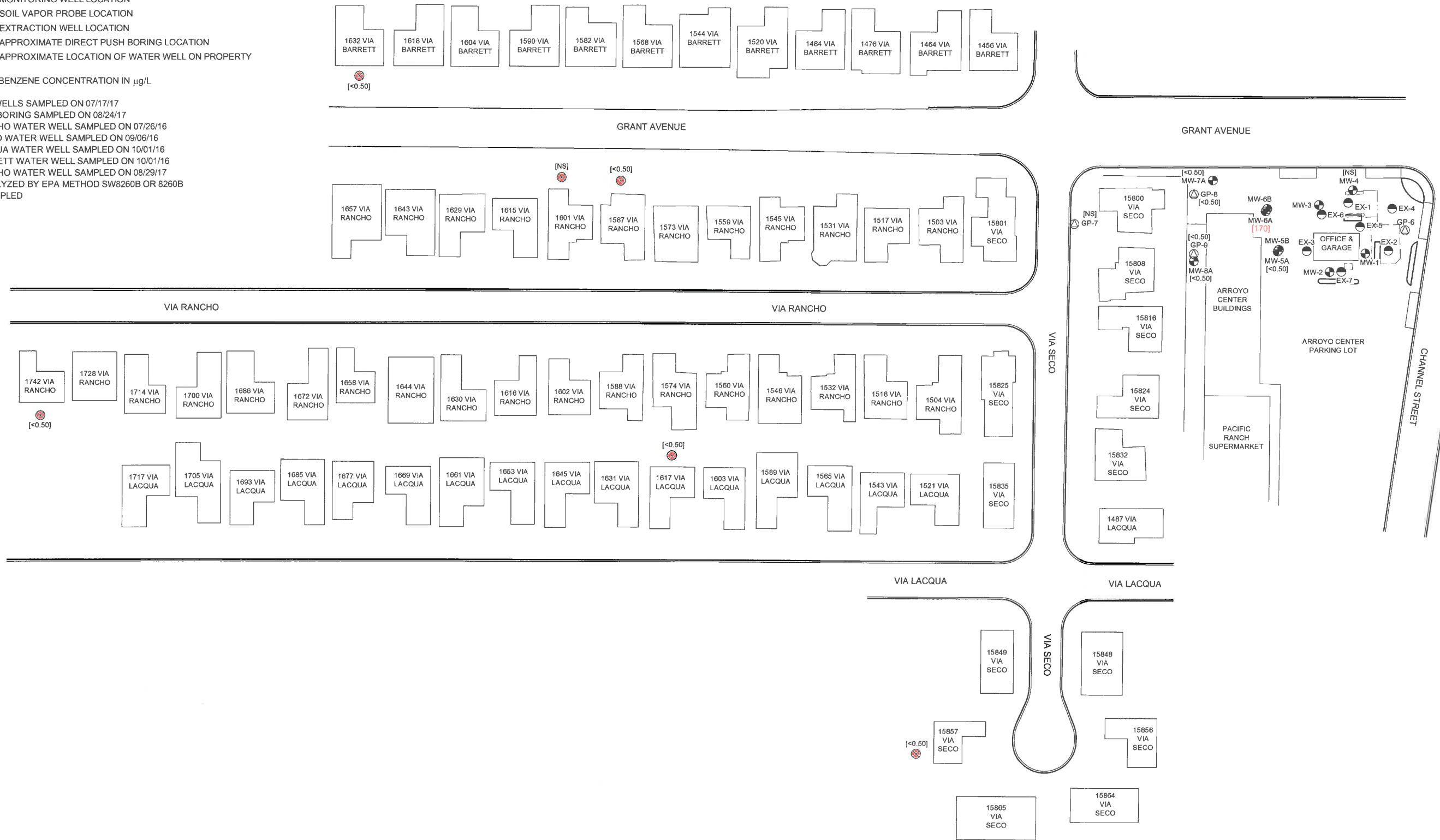


LEGEND

-  MW-1 MONITORING WELL LOCATION
-  SV-1 SOIL VAPOR PROBE LOCATION
-  EX-1 EXTRACTION WELL LOCATION
-  GP-7 APPROXIMATE DIRECT PUSH BORING LOCATION
-  APPROXIMATE LOCATION OF WATER WELL ON PROPERTY

[460] BENZENE CONCENTRATION IN µg/L

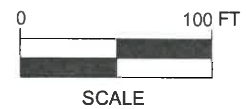
MONITORING WELLS SAMPLED ON 07/17/17  
 DIRECT PUSH BORING SAMPLED ON 08/24/17  
 1587 VIA RANCHO WATER WELL SAMPLED ON 07/26/16  
 15857 VIA SECO WATER WELL SAMPLED ON 09/06/16  
 1617 VIA LACQUA WATER WELL SAMPLED ON 10/01/16  
 1632 VIA BARRETT WATER WELL SAMPLED ON 10/01/16  
 1742 VIA RANCHO WATER WELL SAMPLED ON 08/29/17  
 BENZENE ANALYZED BY EPA METHOD SW8260B OR 8260B  
 [NS] = NOT SAMPLED



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.








PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 03, 2017  
 FILENAME: Olympic Nlso Cons



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 BENZENE IN GROUNDWATER, 10'-12' DEPTH  
 MONITORING WELLS & DOMESTIC WELLS

FIGURE  
**10**  
 PROJECT NO.  
 2115-1436-01

LEGEND

-  MW-1 MONITORING WELL LOCATION
-  SV-1 SOIL VAPOR PROBE LOCATION
-  EX-1 EXTRACTION WELL LOCATION
-  GP-7 APPROXIMATE DIRECT PUSH BORING LOCATION
-  APPROXIMATE LOCATION OF WATER WELL ON PROPERTY

[460] METHYL TERTIARY BUTYL ETHER (MTBE) IN µg/L

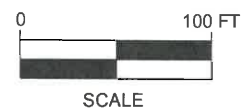
MONITORING WELLS SAMPLED ON 07/17/17  
 DIRECT PUSH BORING SAMPLED ON 08/24/17  
 1587 VIA RANCHO WATER WELL SAMPLED ON 07/26/16  
 15857 VIA SECO WATER WELL SAMPLED ON 09/06/16  
 1617 VIA LACQUA WATER WELL SAMPLED ON 10/01/16  
 1632 VIA BARRETT WATER WELL SAMPLED ON 10/01/16  
 1742 VIA RANCHO WATER WELL SAMPLED ON 08/29/17  
 MTBE ANALYZED BY EPA METHOD SW8260B OR 8260B  
 [NS] = NOT SAMPLED  
 \* NOT USED FOR CONTOURING



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.



PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 03, 2017  
 FILENAME: Olympic Nlso Cons








FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA

MTBE IN GROUNDWATER, 10'-12' DEPTH  
 MONITORING WELLS & DOMESTIC WELLS

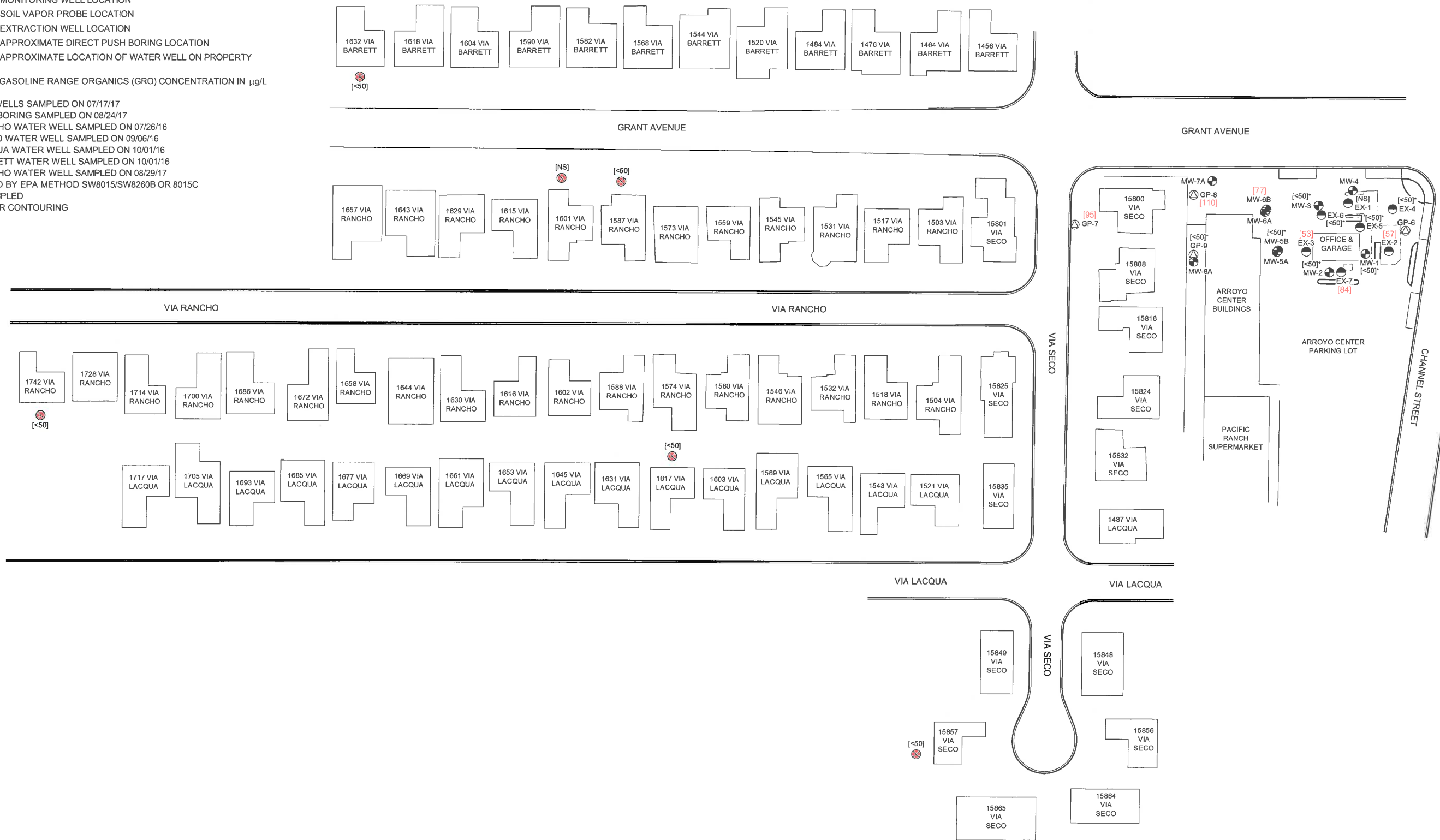
FIGURE  
**11**  
 PROJECT NO.  
 2115-1436-01

LEGEND

-  MW-1 MONITORING WELL LOCATION
-  SV-1 SOIL VAPOR PROBE LOCATION
-  EX-1 EXTRACTION WELL LOCATION
-  GP-7 APPROXIMATE DIRECT PUSH BORING LOCATION
-  APPROXIMATE LOCATION OF WATER WELL ON PROPERTY

[460] GASOLINE RANGE ORGANICS (GRO) CONCENTRATION IN µg/L

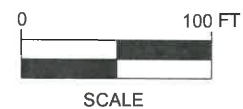
MONITORING WELLS SAMPLED ON 07/17/17  
 DIRECT PUSH BORING SAMPLED ON 08/24/17  
 1587 VIA RANCHO WATER WELL SAMPLED ON 07/26/16  
 15857 VIA SECO WATER WELL SAMPLED ON 09/06/16  
 1617 VIA LACQUA WATER WELL SAMPLED ON 10/01/16  
 1632 VIA BARRETT WATER WELL SAMPLED ON 10/01/16  
 1742 VIA RANCHO WATER WELL SAMPLED ON 08/29/17  
 GRO ANALYZED BY EPA METHOD SW8015/SW8260B OR 8015C  
 [NS] = NOT SAMPLED  
 \* NOT USED FOR CONTOURING



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.








PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 03, 2017  
 FILENAME: Olympic Nlso Cons



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 GRO IN GROUNDWATER, 20'-26' DEPTH  
 MONITORING WELLS & DOMESTIC WELLS

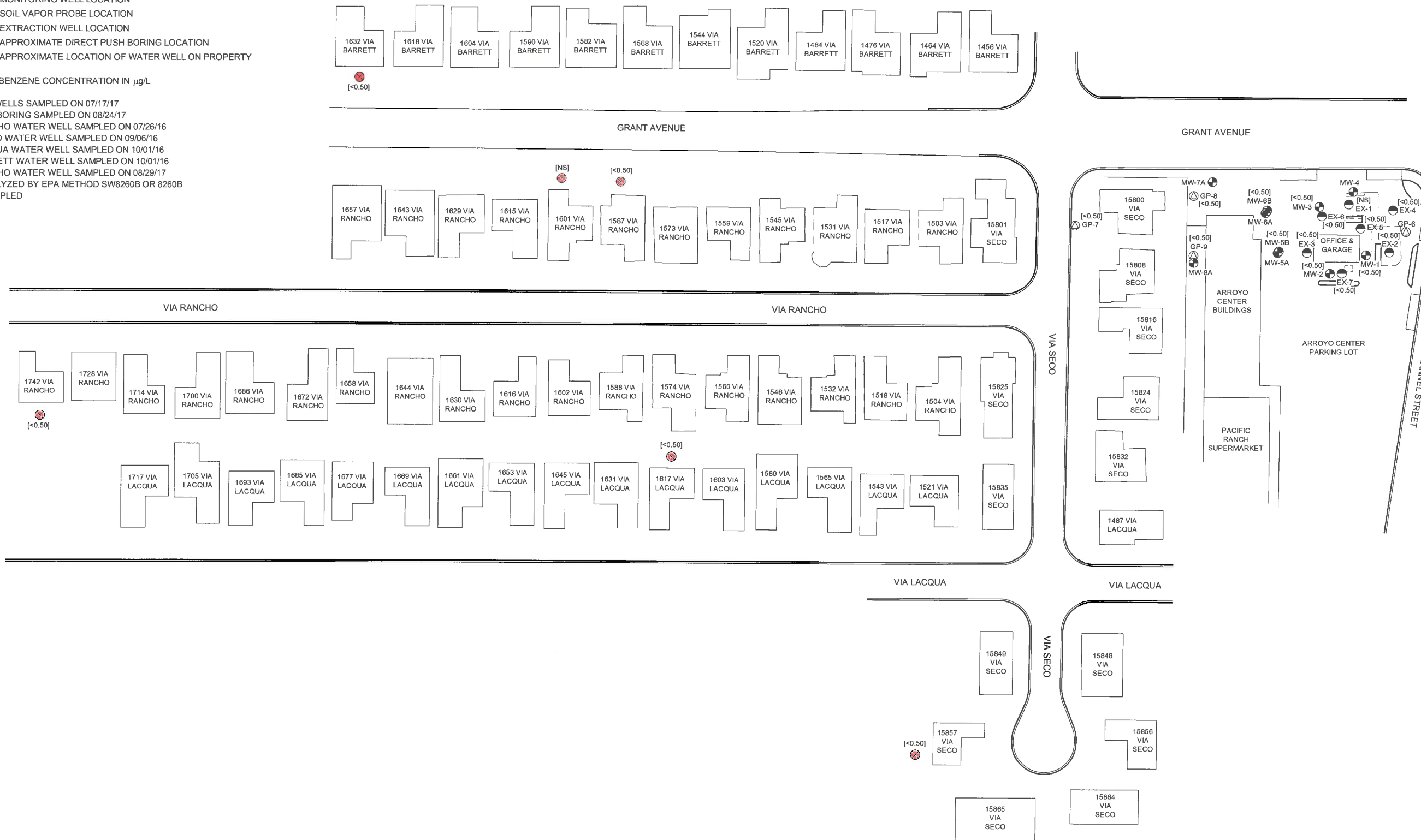
FIGURE  
**12**  
 PROJECT NO.  
 2115-1436-01

LEGEND

-  MW-1 MONITORING WELL LOCATION
-  SV-1 SOIL VAPOR PROBE LOCATION
-  EX-1 EXTRACTION WELL LOCATION
-  GP-7 APPROXIMATE DIRECT PUSH BORING LOCATION
-  APPROXIMATE LOCATION OF WATER WELL ON PROPERTY

[460] BENZENE CONCENTRATION IN  $\mu\text{g/L}$

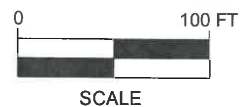
MONITORING WELLS SAMPLED ON 07/17/17  
 DIRECT PUSH BORING SAMPLED ON 08/24/17  
 1587 VIA RANCHO WATER WELL SAMPLED ON 07/26/16  
 15857 VIA SECO WATER WELL SAMPLED ON 09/06/16  
 1617 VIA LACQUA WATER WELL SAMPLED ON 10/01/16  
 1632 VIA BARRETT WATER WELL SAMPLED ON 10/01/16  
 1742 VIA RANCHO WATER WELL SAMPLED ON 08/29/17  
 BENZENE ANALYZED BY EPA METHOD SW8260B OR 8260B  
 [NS] = NOT SAMPLED



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.








PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 03, 2017  
 FILENAME: Olympic Nlso Cons



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA  
 BENZENE IN GROUNDWATER, 20'-26' DEPTH  
 MONITORING WELLS & DOMESTIC WELLS

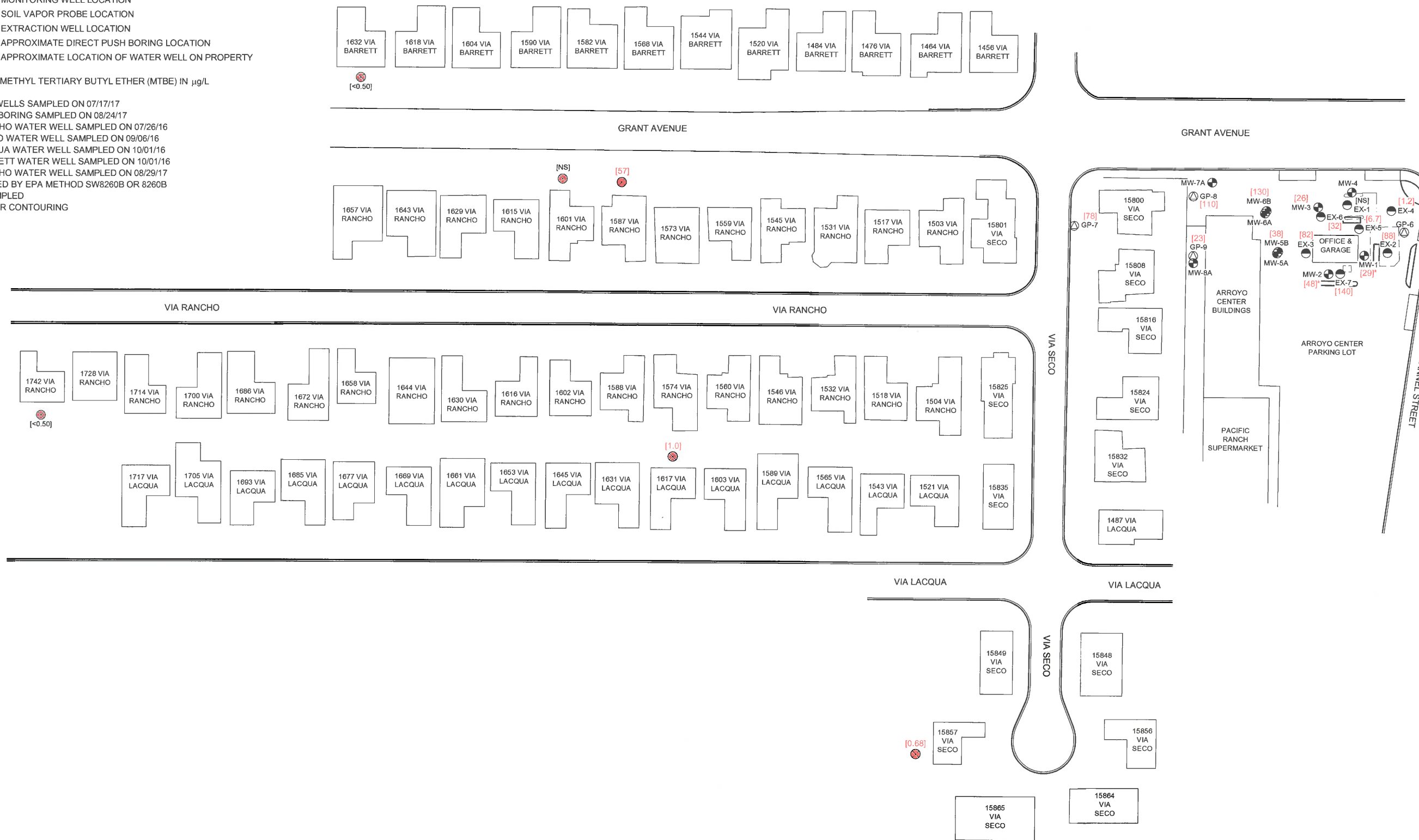
FIGURE  
**13**  
 PROJECT NO.  
 2115-1436-01

LEGEND

-  MW-1 MONITORING WELL LOCATION
-  SV-1 SOIL VAPOR PROBE LOCATION
-  EX-1 EXTRACTION WELL LOCATION
-  GP-7 APPROXIMATE DIRECT PUSH BORING LOCATION
-  APPROXIMATE LOCATION OF WATER WELL ON PROPERTY

[460] METHYL TERTIARY BUTYL ETHER (MTBE) IN  $\mu\text{g/L}$

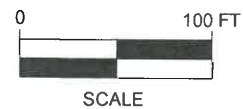
MONITORING WELLS SAMPLED ON 07/17/17  
 DIRECT PUSH BORING SAMPLED ON 08/24/17  
 1587 VIA RANCHO WATER WELL SAMPLED ON 07/26/16  
 15857 VIA SECO WATER WELL SAMPLED ON 09/06/16  
 1617 VIA LACQUA WATER WELL SAMPLED ON 10/01/16  
 1632 VIA BARRETT WATER WELL SAMPLED ON 10/01/16  
 1742 VIA RANCHO WATER WELL SAMPLED ON 08/29/17  
 MTBE ANALYZED BY EPA METHOD SW8260B OR 8260B  
 [NS] = NOT SAMPLED  
 \* NOT USED FOR CONTOURING



BASED ON SURVEY PREPARED BY MORROW SURVEYING ON 6/15/11 & UPDATED IN JUNE 2014 & DECEMBER 2015.



PATH NAME: Olympic  
 DRAFTER INITIALS: DMG  
 DATE LAST REVISED: October 03, 2017  
 FILENAME: Olympic Nlso Cons



FORMER OLYMPIC SERVICE STATION  
 1436 GRANT AVENUE  
 SAN LORENZO, CALIFORNIA

MTBE IN GROUNDWATER, 20'-26' DEPTH  
 MONITORING WELLS & DOMESTIC WELLS

FIGURE  
**14**  
 PROJECT NO.  
 2115-1436-01

**APPENDIX A**  
**FIELD PRACTICES AND PROCEDURES**

## **FIELD PRACTICES AND PROCEDURES**

---

General procedures used by Stratus in site assessments for drilling exploratory borings, collecting samples, and installing monitoring wells are described herein. These general procedures are used to provide consistent and reproducible results; however, some procedure may be modified based on site conditions. A California state-registered geologist supervises the following procedures.

### **PRE-FIELD WORK ACTIVITIES**

#### **Health and Safety Plan**

Field work performed by Stratus at the site is conducted according to guidelines established in a Site Health and Safety Plan (SHSP). The SHSP is a document which describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. A copy of the SHSP is at the site and available for reference by appropriate parties during work at the site.

#### **Locating Underground Utilities**

Prior to commencement of any work that is to be below surface grade, the location of the excavation, boring, etc., is marked with white paint as required by law. An underground locating service such as Underground Service Alert (USA) is contacted. The locating company contacts the owners of the various utilities in the vicinity of the site to mark the locations of their underground utilities. Any invasive work is preceded by hand augering to a minimum depth of five feet below surface grade to avoid contact with underground utilities.

### **FIELD METHODS AND PROCEDURES**

#### **Exploratory Soil Borings**

Soil borings will be drilled using a truck-mounted, hollow stem auger drill rig. Soil samples for logging will be obtained from auger-return materials and by advancing a modified California split-spoon sampler equipped with brass or stainless steel liners into undisturbed soil beyond the tip of the auger. Soils will be logged by a geologist according to the Unified Soil Classification System and standard geological techniques. Drill cuttings will be screened using a portable photoionization detector (PID) or a flame ionization detector (FID). Exploratory soil borings not used for monitoring well installation will be backfilled to the surface with a bentonite-cement slurry pumped into the boring through a tremie pipe.

Soil sampling equipment will be cleaned with a detergent water solution, rinsed with clean water, and equipped with clean liners between sampling intervals. Augers and samplers will be steam cleaned between each boring to reduce the possibility of cross contamination. Steam cleaning effluent will be contained in 55-gallon drums and

temporarily stored on site. The disposal of the effluent will be the responsibility of the client, unless authorized by the client for disposal by Stratus.

Drill cuttings generated during the drilling procedure will be stockpiled on site or contained in labeled and sealed 55-gallon drums. Stockpiled drill cuttings will be placed on and covered with plastic sheeting. The stockpiled soil is typically characterized by collecting and analyzing composite samples from the stockpile. Stratus Environmental will recommend an appropriate method for disposition of the cuttings based on the analytical results. The client will be responsible for disposal of the drill cuttings.

### **Soil Sample Collection**

During drilling, soil samples will be collected in cleaned brass, two by six inch tubes. The tubes will be set in an 18-inch-long split-barrel sampler. The sampler will be conveyed to bottom of the borehole attached to a wire-line hammer device on the drill rig. When possible, the split-barrel sampler will be driven its entire length, either hydraulically or by repeated pounding a 140-pound hammer using a 30-inch drop. The number of drops (blows) used to drive the sampler will be recorded on the boring log. The sampler will be extracted from the borehole, and the tubes containing the soil samples will be removed. Upon removal, the ends of the lowermost tube will be sealed with Teflon sheets and plastic caps. Soil samples for chemical analysis will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

### **Soil Classification**

As the samples are obtained in the field, they will be classified by the field geologist in accordance with the Unified Soil Classification System. Representative portions of the samples will be retained for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata and pertinent information regarding the method of maintaining and advancing the borehole will be prepared.

### **Soil Sample Screening**

Soil samples selected for chemical analysis will be determined from a head-space analysis using a PID or an FID. The soil will be placed in a resealable plastic bag, sealed, and allowed to reach ambient temperature, at which time the PID probe will be inserted into the resealable plastic bag. The total volatile hydrocarbons present are detected by the PID and reported in parts per million by volume (ppmv). The PID will be calibrated to an isobutylene standard.

Generally two soil samples from each soil boring will be submitted for chemical analysis unless otherwise specified in the scope of work. Soil samples selected for analysis typically represent the highest PID reading recorded for each soil boring and the sample just above first-encountered groundwater.



## **Drill Cuttings and Soil Sampling**

Soil generated during drilling operations will be stockpiled on-site or contained in labeled and sealed 55-gallon drums. The stockpile will be set on and covered by plastic sheeting in a manner to prevent rain water from coming in contact with the soil. Prior to collecting soil samples, Stratus personnel will calculate the approximate volume of soil in the stockpile. The stockpile will then be divided into sections, if warranted, containing the predetermined volume sampling interval. Soil samples will be collected at 0.5 to 2 feet below the surface of the stockpile. Four soil samples will be collected from the stockpile and composited into one sample by the laboratory prior to analysis. The soil samples will be collected in cleaned brass, two by six inch tubes using a hand driven sampling device. To reduce the potential for cross-contamination between samples, the sampler will be cleaned between each sampling event. Upon recovery, the sample container will be sealed at each end with Teflon sheeting and plastic caps to minimize the potential of volatilization and cross-contamination prior to chemical analysis. The soil sample will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

## **Direct-Push Technology, Soil Sampling**

Direct-push is a drilling method of advancing small diameter borings without generating soil cuttings. The system consists of an approximately 2-inch diameter, 4- or 5-foot long, stainless steel soil sampling tool that is hydraulically advanced into subsurface soils by a small rig. The sampling tool is designed similar to a California-modified split-spoon sampler, and lined with a sample tube that enables continuous core sampling.

To collect soil samples, the sampler is advanced to the desired sampling depth. The mouth of the sampling tool is plugged to prevent soil from entering the sampler. Upon reaching the desired sampling depth, the plug at the mouth of the sample tool is disengaged and retracted, the sampler is advanced, and the sampler is filled with soil. The sample tool is then retrieved from the boring, and the sample tube removed. The sample tool is then cleaned, a new tube is placed inside and the sampling equipment is advanced back down the borehole to the next sample interval.

The Stratus geologist describes the entire interval of soil in the tube. The bottom-most 6-inch long section is cut off and retained for possible chemical analysis. The ends of the chemical sample are lined with Teflon sheets, capped, labeled, and placed in an ice-chilled cooler for transport to California Department of Health Services-certified analytical laboratory under chain-of-custody.

## **Direct Push Technology, Water Sampling**

A well known example of direct push technology for water sampling is the Hydropunch. For the purpose of this field method the term hydropunch will be used instead of direct push technology for water sampling.

The hydropunch is typically used with a drill rig. A boring is drilled with hollow stem-augers to just above the sampling zone. In some soil conditions the drill rig can push directly from the surface to the sampling interval. The hydropunch is conveyed to the bottom of the boring using drill rods. Once on bottom the hydropunch is driven a maximum of five feet. The tool is then opened by lifting up the drill rod no more than four feet. Once the tool is opened, water enters and a sample can be collected with a bailer or tubing utilizing a peristaltic pump. Soil particles larger than silt are prevented from entering the tool by a screen within the tool. The water sample is collected, labeled, and handled according to the Quality Assurance Plan.

## **Monitoring Well Installation**

Monitoring wells will be completed by installing 2 to 6 inch-diameter Schedule 40 polyvinyl chloride (PVC) casing. The borehole diameter for a monitoring well will be greater than four inches larger than the outside diameter of the casing. The 2-inch-diameter flush-threaded casing is generally used for wells dedicated for groundwater monitoring purposes.

A monitoring well is typically cased with threaded, factory-perforated and blank Schedule 40 PVC. The perforated interval consists of slotted casing, generally with 0.01 or 0.02 inch-wide by 1.5-inch-long slots, with 42 slots per foot. The screened sections of casing are factory machine slotted and will generally be installed approximately 5 feet above and 10 feet below first-encountered water level. The screened interval will allow for seasonal fluctuation in water level and for monitoring floating product. A threaded or slip PVC cap is secured to the bottom of the casing. The slip cap can be secured with stainless steel screws or friction; no solvents or cements are used. Centering devices may be fastened to the casing to ensure even distribution of filter material and grout within the borehole annulus. The well casing is thoroughly washed and/or steam cleaned, or may be purchased as pre-cleaned, prior to completion.

A filter pack of graded sand will be placed in the annular space between the PVC casing and the borehole wall. Sand will be added to the borehole through the hollow stem of the augers to provide a uniform filter pack around the casing and to stabilize the borehole. Generally the sand pack will be placed to a maximum of 2 feet above the screens, followed by a minimum 1- to 2-foot seal consisting of bentonite pellets.

Cement grout containing a maximum of 5 percent bentonite powder will be placed above the bentonite seal to the ground surface. A concrete traffic-rated vault box will be installed over the monitoring well(s). A watertight locking cap will be installed in the top of the well casing. Reference elevations for each monitoring well will be surveyed when more than two wells will be located on site. Monitoring well elevations will be surveyed by a California licensed surveyor to the nearest 0.01-foot relative to mean sea level (MSL). Horizontal coordinates of the wells will be measured at the same time. Exploratory boring logs and well construction details will be prepared for the final written report.

**APPENDIX B**

**DRILLING PERMIT AND SOIL BORING LOGS**

# Alameda County Public Works Agency - Water Resources Well Permit



399 Elmhurst Street  
Hayward, CA 94544-1395  
Telephone: (510)670-6633 Fax:(510)782-1939

**Application Approved on: 08/17/2017 By jamesy**

**Permit Numbers: W2017-0652**  
**Permits Valid from 08/24/2017 to 08/25/2017**

**Application Id:** 1502925633552  
**Site Location:** 1436 Grant Avenue, San Lorenzo, CA  
**Project Start Date:** 08/24/2017  
**Assigned Inspector:** Contact Eneyew Amberber at (510) 670-5759 or eneyew@acpwa.org

**City of Project Site:** San Lorenzo  
**Completion Date:** 08/25/2017

**Applicant:** Stratus - Scott Bittinger  
3330 Cameron aPk Dr #550, Cameron Park, CA 95682  
**Property Owner:** Jaber Fam Trust  
2801 Encinal Ave, Alameda, CA 94501  
**Client:** \*\* same as Property Owner \*\*

**Phone:** 530-676-2062  
**Phone:** 510-523-4821

	<b>Total Due:</b>	\$265.00
<b>Receipt Number: WR2017-0386</b>	<b>Total Amount Paid:</b>	\$265.00
<b>Payer Name : Stratus</b>	<b>Paid By: CHECK</b>	<b>PAID IN FULL</b>

**Works Requesting Permits:**

Borehole(s) for Investigation-Environmental/Monitorinig Study - 4 Boreholes  
Driller: Penecore - Lic #: 906899 - Method: DP

**Work Total: \$265.00**

**Specifications**

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2017-0652	08/17/2017	11/22/2017	4	3.00 in.	30.00 ft

**Specific Work Permit Conditions**

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
5. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
6. Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 & Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site. Submission dates are set by a

## Alameda County Public Works Agency - Water Resources Well Permit

Regional Water Board or by a regulatory agency. Once a report/data is successfully uploaded, as required, you have met the reporting requirement (i.e. the compliance measure for electronic submittals is the actual upload itself). The upload date should be on or prior to the regulatory due date.

### 7. NOTE:

Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

8. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

9. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

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**SOIL BORING LOG**

**Boring No. GP-6**

**Sheet: 1 of 2**

Client	Former Olympic Station	Date	August 24, 2017
Address	1436 Grant Ave San Lorenzo, CA	Drilling Co.	Penecore Drilling rig type: GP 6712DT
Project No.	2115-1436-1	Driller	Juan Munoz
Logged By:	Allan Dudding	Method	Direct push Hole Diameter: 2.5 inches
		Sampler:	5-foot long x 1.5-inch diameter sample liners
		Depth to GW:	▽ first encountered: 17.5 feet bgs ▼ Static:

Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.				
					1		Asphalt pavement at surface. Boring hand cleared to 5 feet bgs.	
					2		Disturbed soil, pea gravel.	
					3			
					4	CL	Silty Clay, CL, dark gray (5Y 3/1), moist, medium plasticity, 70% clay, 30% silt.	
S	GP-6-4.5		0804		5			0
					6			
					7	SC	Clayey Sand, SC, dark gray (5Y 3/1), moist, 60% fine sand, 40% clay.	
					8	CL	Silty Clay, CL, dark gray (5Y 3/1), moist, medium plasticity, 70% clay, 30% silt.	
					9			
S	GP-6-9.5		0808		10	CL	Clay, Some Silt, CL, black (5Y 2.5/1), moist, medium plasticity, 80% clay, 20% silt.	161
					11			
					12			
					13			
					14			
S	GP-6-14.5		0814		15	CL	Silty Clay, CL, dark grayish brown (2.5Y 4/2), moist, low plasticity, 60% clay, 40% silt.	4.6
					16			
					17			
					18	ML	Clayey Silt, ML, olive brown (2.5Y 4/3), wet, low plasticity, 70% silt, 30% clay.	
					19			
S	GP-6-19.5		0820		20		As above, 60% silt, 30% clay, 10% fine sand.	0

Recovery Sample

Comments: Color descriptions from Munsell Color Chart.




**SOIL BORING LOG**

**Boring No. GP-6**

**Sheet: 2 of 2**

Client	Former Olympic Station	Date	August 24, 2017
Address	1436 Grant Ave San Lorenzo, CA	Drilling Co.	Penecore Drilling rig type: GP 6712DT
Project No.	2115-1436-1	Driller	Juan Munoz
Logged By:	Allan Dudding	Method	Direct push Hole Diameter: 2.5 inches
		Sampler:	5-foot long x 1.5-inch diameter sample liners
		Depth to GW:	▽ first encountered: 17.5 feet bgs ▼ Static:

Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.				
					21	SM	Silty Sand, SM, olive brown (2.5Y 4/3), wet, 60% fine sand, 40% silt.	
					22			
					23			
S	GP-6-23.5		0825		24			
					25			
					26			
					27			
					28			
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			
					37			
					38			
					39			
					40			

<p>Recovery Sample</p>	<p>Comments: Color descriptions from Munsell Color Chart.</p> <div style="text-align: center; margin-top: 20px;">  </div>
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**SOIL BORING LOG**

**Boring No. GP-7**

**Sheet: 1 of 2**

Client	Former Olympic Station	Date	August 24, 2017
Address	1436 Grant Ave San Lorenzo, CA	Drilling Co.	Penecore Drilling rig type: GP 6712DT
Project No.	2115-1436-1	Driller	Juan Munoz
Logged By:	Allan Dudding	Method	Direct push Hole Diameter: 2.5 inches
		Sampler:	5-foot long x 1.5-inch diameter sample liners
		Depth to GW:	▽ first encountered: 17 feet bgs ▼ Static:

Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.				
					1		Asphalt pavement at surface. Boring hand cleared to 5 feet bgs.	
					2			
					3			
					4			
S	GP-7-5		1118		5	CL	Silty Clay, CL, dark grayish brown (5Y 5/2), moist, medium plasticity, 70% clay, 30% silt.	0
					6			
					7			
					8			
					9			
S	GP-7-10		1121		10			0
					11			
					12			
					13			
					14			
S	GP-7-15		1125		15		As above, color changes to olive brown (2.5Y 4/3).	0
					16			
NS		Insufficient water			17	▽		
					18	ML	Clayey Silt, ML, olive brown (2.5Y 4/3), wet, low plasticity, 60% silt, 40% clay, trace fine sand.	
					19			
S	GP-7-20		1150		20	CL	Silty Clay, CL, olive bornw (2.5Y 4/3), moist, low plasticity, 60% clay, 40% silt.	0

Recovery Sample

Comments: Color descriptions from Munsell Color Chart.





SOIL BORING LOG

Boring No. GP-7

Sheet: 2 of 2

Client Former Olympic Station Date August 24, 2017  
 Address 1436 Grant Ave Drilling Co. Penecore Drilling rig type: GP 6712DT  
San Lorenzo, CA Driller Juan Munoz  
 Project No. 2115-1436-1 Method Direct push Hole Diameter: 2.5 inches  
 Logged By: Allan Dudding Sampler: 5-foot long x 1.5-inch diameter sample liners

Depth to GW: ▽ first encountered: 17 feet bgs ▽ Static:

Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.				
					21	CL	Silty Clay, CL, olive brown (2.5Y 4/3), moist, low plasticity, 60% clay, 40% silt.	
					22	ML	Clayey Silt, ML, olive brown (2.5Y 4/3), wet, low plasticity, 60% silt, 40% clay.	
					23			
W	GP-7-24		1158		24	CL	Clay, Some Silt, CL, olive brown (2.5Y 4/3), moist, medium plasticity, 80% clay, 20% silt.	0
S	GP-7-24		1153					
					25			
					26			
					27			
					28			
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			
					37			
					38			
					39			
					40			

Recovery Sample

Comments: Color descriptions from Munsell Color Chart.



**SOIL BORING LOG**

**Boring No. GP-8**

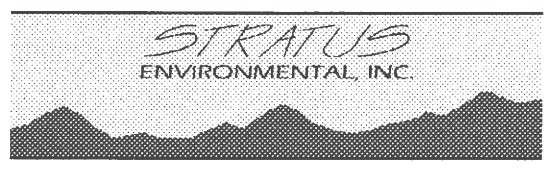
**Sheet: 1 of 2**

Client	Former Olympic Station	Date	August 24, 2017
Address	1436 Grant Ave San Lorenzo, CA	Drilling Co.	Penecore Drilling rig type: GP 6712DT
Project No.	2115-1436-1	Driller	Juan Munoz
Logged By:	Allan Dudding	Method	Direct push Hole Diameter: 2.5 inches
		Sampler:	5-foot long x 1.5-inch diameter sample liners
		Depth to GW:	▽ first encountered: 17 feet bgs ▼ Static:

Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.				
					1			
					2			
					3			
					4			
S	GP-8-5		0912		5	CL	Silty Clay, CL, Very Dark Gray (5Y 3/1), moist, medium plasticity, 80% clay, 20% silt.	0
					6			
					7			
					8			
S	GP-8-10		0914		10			0
					11			
					12			
					13			
S	GP-8-15		0917		15		As above, color changes to olive brown (2.5Y 4/3).	0
					16			
					17	▽		
W	GP-8-18		0926		18	ML	Clayey Silt, ML, olive brown (2.5Y 4/3), wet, low plasticity, 60% silt, 40% clay, trace fine sand.	
					19			
S	GP-8-20		0933		20			

Recovery Sample

Comments:



**SOIL BORING LOG**

**Boring No. GP-8**

**Sheet: 2 of 2**

Client	<u>Former Olympic Station</u>	Date	<u>August 24, 2017</u>	
Address	<u>1436 Grant Ave</u>	Drilling Co.	<u>Penecore Drilling</u>	<u>rig type: GP 6712DT</u>
	<u>San Lorenzo, CA</u>	Driller	<u>Juan Munoz</u>	
Project No.	<u>2115-1436-1</u>	Method	<u>Direct push</u>	<u>Hole Diameter: 2.5 inches</u>
Logged By:	<u>Allan Dudding</u>	Sampler:	<u>5-foot long x 1.5-inch diameter sample liners</u>	
		Depth to GW:	<u>▽ first encountered: 17 feet bgs</u>	<u>▼ Static:</u>

Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.				
					21	ML	Clayey Silt, ML, olive brown (2.5Y 4/3), wet, low plasticity, 60% silt, 40% clay, trace fine sand.	
					22			
					23			
W	GP-8-24		0937		24			
S	GP-8-24		0933					
					25			
					26			
					27			
					28			
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			
					37			
					38			
					39			
					40			

Recovery Sample

Comments:



**SOIL BORING LOG**

**Boring No. GP-9**

**Sheet: 1 of 2**

Client	Former Olympic Station	Date	August 24, 2017
Address	1436 Grant Ave San Lorenzo, CA	Drilling Co.	Penecore Drilling rig type: GP 6712DT
Project No.	2115-1436-1	Driller	Juan Munoz
Logged By:	Allan Dudding	Method	Direct push Hole Diameter: 2.5 inches
		Sampler:	5-foot long x 1.5-inch diameter sample liners
		Depth to GW:	▽ first encountered: 17 feet bgs ▼ Static:

Type	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)	
	No.	Blow Count					Time
			1				
			2				
			3				
			4				
S	GP-9-5		5	CL	Silty Clay, CL, Very Dark Gray (5Y 3/1), moist, medium plasticity, 70% clay, 30% silt.	0	
		1012	6				
			7				
			8				
			9				
S	GP-9-10		10	CL	As above, color changes to olive brown (2.5Y 4/3).	0	
		1022	11				
			12				
			13				
			14				
S	GP-9-15		15	ML	Clayey Silt, ML, olive brown (2.5Y 4/3), wet, low plasticity, 70% clay, 30% silt	0	
		1025	16				
			17				
W	GP-9-18		18				Moisture Increases
		1035	19				
S	GP-9-20		20				

Recovery Sample

Comments:



**SOIL BORING LOG**

**Boring No. GP-9**

**Sheet: 2 of 2**

Client	<u>Former Olympic Station</u>	Date	<u>August 24, 2017</u>	
Address	<u>1436 Grant Ave</u>	Drilling Co.	<u>Penecore Drilling</u>	rig type: <u>GP 6712DT</u>
	<u>San Lorenzo, CA</u>	Driller	<u>Juan Munoz</u>	
Project No.	<u>2115-1436-1</u>	Method	<u>Direct push</u>	Hole Diameter: <u>2.5 inches</u>
Logged By:	<u>Allan Dudding</u>	Sampler:	<u>5-foot long x 1.5-inch diameter sample liners</u>	
		Depth to GW:	<u>▽ first encountered: 17 feet bgs</u>	<u>▼ Static:</u>

Sample		Blow Count	Sample		Depth Scale	Lithologic Column	Descriptions of Materials and Conditions	PID (PPM)
Type	No.		Time	Recov.				
					21	ML	Clayey Silt, ML, olive brown (2.5Y 4/3), wet, low plasticity, 70% clay , 30% silt	
					22			
					23			
W	GP-9-24		1048		24			
S	GP-9-24		1046					
					25			
					26			
					27			
					28			
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			
					37			
					38			
					39			
					40			

Recovery Sample

Comments:



## **APPENDIX C**

### **CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION**



*Alpha Analytical, Inc*  
255 Glendale Ave, #21  
Sparks, Nevada 89431  
TEL: (775) 355-1044 FAX: (775) 355-0406  
Website: [www.alpha-analytical.com](http://www.alpha-analytical.com)

September 05, 2017

Scott Bittinger  
Stratus Environmental  
3330 Cameron Park Drive  
Cameron Park, CA 956828861  
TEL: (530) 676-6001  
FAX (530) 676-6005

RE: Olympic

Dear Scott Bittinger:

Order No.: STR1708254

There were no problems with the analytical events associated with this report unless noted.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in cursive script that reads "Roger Scholl".

Roger Scholl  
Laboratory Director  
255 Glendale Ave, #21  
Sparks, Nevada 89431



# Alpha Analytical, Inc.

(775) 355-1044 / (775) 355-0406 FAX / 1-800-283-1183  
225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 8:04:00 AM

**Project:** Olympic

**Lab ID:** 1708254-01

**Matrix:** SOIL

**Client Sample ID** GP-6-4.5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Naphthalene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluorene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Phenanthrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluoranthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Chrysene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(b&k)fluoranthene, isomeric pair	ND	50		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Indeno(1,2,3-cd)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Dibenz(a,h)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(g,h,i)perylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Surr: 2-Fluorobiphenyl	119	52-130		%Rec	8/31/2017	PNAs by EPA 8270SIM
Surr: 4-Terphenyl-d14	95	54-158		%Rec	8/31/2017	PNAs by EPA 8270SIM
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	95	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	92	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	40		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	95	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	92	70-130		%Rec	8/30/2017	VOCs by EPA 8260B





# Alpha Analytical, Inc.

(775) 355-1044 / (775) 355-0406 FAX / 1-800-283-1183  
225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 8:08:00 AM

**Project:** Olympic

**Lab ID:** 1708254-02

**Matrix:** SOIL

**Client Sample ID** GP-6-9.5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	30,000	2000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	94	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	120	10		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	88	10		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	10	V	µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	870	10		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	10	V	µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	10	V	µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	80	V	µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	94	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



# Alpha Analytical, Inc.

(775) 355-1044 / (775) 355-0406 FAX / 1-800-283-1183  
225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 8:14:00 AM

**Project:** Olympic

**Lab ID:** 1708254-03

**Matrix:** SOIL

**Client Sample ID** GP-6-14.5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	87	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	100	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	87	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



# Alpha Analytical, Inc.

(775) 355-1044 / (775) 355-0406 FAX / 1-800-283-1183  
225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 8:20:00 AM

**Project:** Olympic

**Lab ID:** 1708254-04

**Matrix:** SOIL

**Client Sample ID** GP-6-19.5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	89	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	89	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 8:25:00 AM

**Project:** Olympic

**Lab ID:** 1708254-05

**Matrix:** SOIL

**Client Sample ID** GP-6-23.5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	90	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	90	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 9:12:00 AM

**Project:** Olympic

**Lab ID:** 1708254-06

**Matrix:** SOIL

**Client Sample ID** GP-8-5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Naphthalene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluorene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Phenanthrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluoranthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Chrysene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(b&k)fluoranthene, isomeric pair	ND	50		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Indeno(1,2,3-cd)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Dibenz(a,h)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(g,h,i)perylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Surr: 2-Fluorobiphenyl	109	52-130		%Rec	8/31/2017	PNAs by EPA 8270SIM
Surr: 4-Terphenyl-d14	103	54-158		%Rec	8/31/2017	PNAs by EPA 8270SIM
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	98	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	40		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	98	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 9:14:00 AM

**Project:** Olympic

**Lab ID:** 1708254-07

**Matrix:** SOIL

**Client Sample ID** GP-8-10

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	40		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	97	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

CLIENT: Stratus Environmental

Collection Date: 8/24/2017 9:33:00 AM

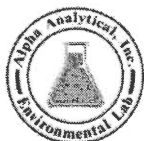
Project: Olympic

Lab ID: 1708254-08

Matrix: SOIL

Client Sample ID GP-8-20

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	98	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	98	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 10:20:00 AM

**Project:** Olympic

**Lab ID:** 1708254-09

**Matrix:** SOIL

**Client Sample ID** GP-9-5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Naphthalene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluorene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Phenanthrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluoranthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Chrysene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(b&k)fluoranthene, isomeric pair	ND	50		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Indeno(1,2,3-cd)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Dibenz(a,h)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(g,h,i)perylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Surr: 2-Fluorobiphenyl	116	52-130		%Rec	8/31/2017	PNAs by EPA 8270SIM
Surr: 4-Terphenyl-d14	105	54-158		%Rec	8/31/2017	PNAs by EPA 8270SIM
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	100	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	98	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	40		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	100	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	98	70-130		%Rec	8/30/2017	VOCs by EPA 8260B





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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 10:22:00 AM

**Project:** Olympic

**Lab ID:** 1708254-10

**Matrix:** SOIL

**Client Sample ID** GP-9-10

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	101	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	87	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	40		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	101	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	87	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 10:43:00 AM

**Project:** Olympic

**Lab ID:** 1708254-11

**Matrix:** SOIL

**Client Sample ID** GP-9-20

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	116	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	98	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	90	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	116	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	98	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	90	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254  
 Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 11:18:00 AM

**Project:** Olympic

**Lab ID:** 1708254-12

**Matrix:** SOIL

**Client Sample ID** GP-7-5

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Naphthalene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Acenaphthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluorene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Phenanthrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Fluoranthene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Chrysene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(b&k)fluoranthene, isomeric pair	ND	50		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(a)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Indeno(1,2,3-cd)pyrene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Dibenz(a,h)anthracene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Benzo(g,h,i)perylene	ND	25		µg/Kg	8/31/2017	PNAs by EPA 8270SIM
Surr: 2-Fluorobiphenyl	117	52-130		%Rec	8/31/2017	PNAs by EPA 8270SIM
Surr: 4-Terphenyl-d14	122	54-158		%Rec	8/31/2017	PNAs by EPA 8270SIM
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	100	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	98	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	40		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	100	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	98	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 11:21:00 AM

**Project:** Olympic

**Lab ID:** 1708254-13

**Matrix:** SOIL

**Client Sample ID** GP-7-10

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	101	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	93	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Naphthalene	ND	40		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	114	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	101	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	93	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



# Alpha Analytical, Inc.

(775) 355-1044 / (775) 355-0406 FAX / 1-800-283-1183  
225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 11:50:00 AM

**Project:** Olympic

**Lab ID:** 1708254-14

**Matrix:** SOIL

**Client Sample ID** GP-7-20

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	1000		µg/Kg	8/30/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	101	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	8/30/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	8.1	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Benzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Toluene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Ethylbenzene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
m,p-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
o-Xylene	ND	5.0		µg/Kg	8/30/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	117	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: Toluene-d8	101	70-130		%Rec	8/30/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	8/30/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 9:26:00 AM

**Project:** Olympic

**Lab ID:** 1708254-15

**Matrix:** AQUEOUS

**Client Sample ID** GP-8-18

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	100	50		µg/L	8/29/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	97	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	120	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	97	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	8/29/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 9:37:00 AM

**Project:** Olympic

**Lab ID:** 1708254-16

**Matrix:** AQUEOUS

**Client Sample ID** GP-8-24

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	110	50		µg/L	8/29/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	98	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	110	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	98	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	8/29/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 10:35:00 AM

**Project:** Olympic

**Lab ID:** 1708254-17

**Matrix:** AQUEOUS

**Client Sample ID** GP-9-18

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	50		µg/L	8/29/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	29	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	8/29/2017	VOCs by EPA 8260B





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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 10:48:00 AM

**Project:** Olympic

**Lab ID:** 1708254-18

**Matrix:** AQUEOUS

**Client Sample ID** GP-9-24

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	ND	50		µg/L	8/29/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	99	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	95	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	23	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	99	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: Toluene-d8	95	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	8/29/2017	VOCs by EPA 8260B



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# Analytical Report

WO#: STR1708254

Report Date: 9/5/2017

**CLIENT:** Stratus Environmental

**Collection Date:** 8/24/2017 11:58:00 AM

**Project:** Olympic

**Lab ID:** 1708254-19

**Matrix:** AQUEOUS

**Client Sample ID** GP-7-24

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
TPH-P (GRO)	95	50		µg/L	8/29/2017	TPH-P by EPA 8015C
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	8/29/2017	TPH-P by EPA 8015C
Methyl tert-butyl ether (MTBE)	78	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	8/29/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: Toluene-d8	96	70-130		%Rec	8/29/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	112	70-130		%Rec	8/29/2017	VOCs by EPA 8260B



Alpha Analytical, Inc  
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 Website: www.alpha-analytical.com

# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental  
**Project:** Olympic

**TestCode:** PNA\_SIM\_S

Sample ID: <b>MB-2007</b>	SampType: <b>MBLK</b>	TestCode: <b>PNA_SIM_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>PBS</b>	Batch ID: <b>2007</b>	TestNo: <b>SW8270C</b>	
Prep Date: <b>8/23/2017</b>	RunNo: <b>1553</b>	SeqNo: <b>38680</b>	
Analysis Date: <b>8/31/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	25									
Acenaphthylene	ND	25									
Acenaphthene	ND	25									
Fluorene	ND	25									
Phenanthrene	ND	25									
Anthracene	ND	25									
Fluoranthene	ND	25									
Pyrene	ND	25									
Benzo(a)anthracene	ND	25									
Chrysene	ND	25									
Benzo(b&k)fluoranthene, isomeric pair	ND	50									
Benzo(a)pyrene	ND	25									
Indeno(1,2,3-cd)pyrene	ND	25									
Dibenz(a,h)anthracene	ND	25									
Benzo(g,h,i)perylene	ND	25									
Surr: 2-Fluorobiphenyl	380		312.5		121	52	130				
Surr: 4-Terphenyl-d14	410		312.5		131	54	158				

Sample ID: <b>LCSD-2007</b>	SampType: <b>LCSD</b>	TestCode: <b>PNA_SIM_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>LCSS02</b>	Batch ID: <b>2007</b>	TestNo: <b>SW8270C</b>	
Prep Date: <b>8/23/2017</b>	RunNo: <b>1553</b>	SeqNo: <b>38991</b>	
Analysis Date: <b>8/31/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	369	25	312.5	0	118	44.51	143.49	342	7.6	32	
Acenaphthylene	406	25	312.5	0	130	44.51	155.49	366	10	36	
Acenaphthene	333	25	312.5	0	107	41.51	138.49	347	4	32	
Fluorene	348	25	312.5	0	111	45.51	140.49	315	9.8	42	
Phenanthrene	266	25	312.5	0	85.0	25.51	136.49	296	11	33	
Anthracene	444	25	312.5	0	142	51.51	144.49	388	14	42	
Fluoranthene	345	25	312.5	0	110	37.51	144.49	358	3.8	40	
Pyrene	358	25	312.5	0	115	28.51	143.49	339	5.5	49	
Benzo(a)anthracene	301	25	312.5	0	96.4	21.51	149.49	198	41	43	
Chrysene	401	25	312.5	0	128	44.51	152.49	417	3.9	36	
Benzo(b&k)fluoranthene, isomeric pair	761	50	625	0	122	20.51	155.49	785	3.1	43	
Benzo(a)pyrene	275	25	312.5	0	87.9	30.51	149.49	276	0.41	34	
Indeno(1,2,3-cd)pyrene	331	25	312.5	0	106	9.51	190.49	254	26	45	
Dibenz(a,h)anthracene	290	25	312.5	0	92.7	9.51	185.49	275	5.2	47	
Benzo(g,h,i)perylene	336	25	312.5	0	107	10.51	150.49	276	20	50	

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



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# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental  
**Project:** Olympic

**TestCode:** PNA\_SIM\_S

Sample ID: <b>LCSD-2007</b>	SampType: <b>LCSD</b>	TestCode: <b>PNA_SIM_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>LCSS02</b>	Batch ID: <b>2007</b>	TestNo: <b>SW8270C</b>	
Prep Date: <b>8/23/2017</b>	RunNo: <b>1553</b>	SeqNo: <b>38991</b>	
Analysis Date: <b>8/31/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	347		312.5		111	52	130	321	0	0	
Surr: 4-Terphenyl-d14	337		312.5		108	54	158	342	0	0	

Sample ID: <b>LCS-2007</b>	SampType: <b>LCS</b>	TestCode: <b>PNA_SIM_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>LCSS</b>	Batch ID: <b>2007</b>	TestNo: <b>SW8270C</b>	
Prep Date: <b>8/23/2017</b>	RunNo: <b>1553</b>	SeqNo: <b>38990</b>	
Analysis Date: <b>8/31/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	342	25	312.5	0	109	44.51	143.49				
Acenaphthylene	366	25	312.5	0	117	44.51	155.49				
Acenaphthene	347	25	312.5	0	111	41.51	138.49				
Fluorene	315	25	312.5	0	101	45.51	140.49				
Phenanthrene	296	25	312.5	0	94.7	25.51	136.49				
Anthracene	388	25	312.5	0	124	51.51	144.49				
Fluoranthene	358	25	312.5	0	115	37.51	144.49				
Pyrene	339	25	312.5	0	108	28.51	143.49				
Benzo(a)anthracene	198	25	312.5	0	63.4	21.51	149.49				
Chrysene	417	25	312.5	0	134	44.51	152.49				
Benzo(b&k)fluoranthene, isomeric pair	785	50	625	0	126	20.51	155.49				
Benzo(a)pyrene	276	25	312.5	0	88.2	30.51	149.49				
Indeno(1,2,3-cd)pyrene	254	25	312.5	0	81.3	9.51	190.49				
Dibenz(a,h)anthracene	275	25	312.5	0	87.9	9.51	185.49				
Benzo(g,h,i)perylene	276	25	312.5	0	88.2	10.51	150.49				
Surr: 2-Fluorobiphenyl	321		312.5		103	52	130				
Surr: 4-Terphenyl-d14	342		312.5		110	54	158				

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental  
**Project:** Olympic

**TestCode:** TPH/P\_S

Sample ID: <b>MB-2033</b>	SampType: <b>MBLK</b>	TestCode: <b>TPH/P_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>PBS</b>	Batch ID: <b>A2033B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/30/2017</b>	RunNo: <b>1551</b>	SeqNo: <b>38639</b>	
Analysis Date: <b>8/30/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	ND	1000									
Surr: 1,2-Dichloroethane-d4	0.21		200		107	69.51	130.49				
Surr: Toluene-d8	0.2		200		97.9	69.51	130.49				
Surr: 4-Bromofluorobenzene	0.18		200		89.8	69.51	130.49				

Sample ID: <b>GLCS-2033</b>	SampType: <b>GLCS</b>	TestCode: <b>TPH/P_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>BatchQC</b>	Batch ID: <b>A2033B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/30/2017</b>	RunNo: <b>1551</b>	SeqNo: <b>38624</b>	
Analysis Date: <b>8/30/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	16800	2000	16000	0	105	62.51	149.49				
Surr: 1,2-Dichloroethane-d4	428		400		107	69.51	130.49				
Surr: Toluene-d8	372		400		93.0	69.51	130.49				
Surr: 4-Bromofluorobenzene	393		400		98.2	69.51	130.49				

Sample ID: <b>1708254-11AGSD</b>	SampType: <b>GSD</b>	TestCode: <b>TPH/P_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>GP-9-20</b>	Batch ID: <b>A2033B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/30/2017</b>	RunNo: <b>1551</b>	SeqNo: <b>38622</b>	
Analysis Date: <b>8/30/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	10200	2000	16000	0	63.9	35.51	164.49	10.3	0.93	40	
Surr: 1,2-Dichloroethane-d4	425		400		106	69.51	130.49	0.427	0	0	
Surr: Toluene-d8	368		400		91.9	69.51	130.49	0.37	0	0	
Surr: 4-Bromofluorobenzene	386		400		96.4	69.51	130.49	0.384	0	0	

Sample ID: <b>1708254-11AGS</b>	SampType: <b>GS</b>	TestCode: <b>TPH/P_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>GP-9-20</b>	Batch ID: <b>A2033B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/30/2017</b>	RunNo: <b>1551</b>	SeqNo: <b>38623</b>	
Analysis Date: <b>8/30/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	10300	2000	16000	0	64.5	35.51	164.49				
Surr: 1,2-Dichloroethane-d4	427		400		107	69.51	130.49				
Surr: Toluene-d8	370		400		92.5	69.51	130.49				
Surr: 4-Bromofluorobenzene	384		400		96.0	69.51	130.49				

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



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 Website: www.alpha-analytical.com

# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental

**Project:** Olympic

**TestCode:** TPH/P\_S

Sample ID: 1708254-11AGS	SampType: GS	TestCode: TPH/P_S	Units: µg/Kg								
Client ID: GP-9-20	Batch ID: A2033B	TestNo: SW8015									
Prep Date: 8/30/2017	RunNo: 1551	SeqNo: 38623									
Analysis Date: 8/30/2017											
Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental  
**Project:** Olympic

**TestCode:** TPH/P\_W

Sample ID: <b>MB-2044</b>	SampType: <b>MBLK</b>	TestCode: <b>TPH/P_W</b>	Units: <b>µg/L</b>
Client ID: <b>PBW</b>	Batch ID: <b>A2044B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38487</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	ND	50									
Surr: 1,2-Dichloroethane-d4	0.01		10		100	69.51	130.49				
Surr: Toluene-d8	0.0096		10		96.0	69.51	130.49				
Surr: 4-Bromofluorobenzene	0.011		10		112	69.51	130.49				

Sample ID: <b>GLCS-2044</b>	SampType: <b>GLCS</b>	TestCode: <b>TPH/P_W</b>	Units: <b>µg/L</b>
Client ID: <b>BatchQC</b>	Batch ID: <b>A2044B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38486</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	464	50	400	0	116	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.94		10		99.4	69.51	130.49				
Surr: Toluene-d8	9.75		10		97.5	69.51	130.49				
Surr: 4-Bromofluorobenzene	11.1		10		111	69.51	130.49				

Sample ID: <b>1708254-15AGSD</b>	SampType: <b>GSD</b>	TestCode: <b>TPH/P_W</b>	Units: <b>µg/L</b>
Client ID: <b>GP-8-18</b>	Batch ID: <b>A2044B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38507</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	2180	250	2000	0	104	53.51	143.49	2.21	1.3	23	
Surr: 1,2-Dichloroethane-d4	46.4		50		92.9	69.51	130.49	0.0466	0	0	
Surr: Toluene-d8	48.5		50		97.0	69.51	130.49	0.0488	0	0	
Surr: 4-Bromofluorobenzene	53.3		50		107	69.51	130.49	0.0543	0	0	

Sample ID: <b>1708254-15AGS</b>	SampType: <b>GS</b>	TestCode: <b>TPH/P_W</b>	Units: <b>µg/L</b>
Client ID: <b>GP-8-18</b>	Batch ID: <b>A2044B</b>	TestNo: <b>SW8015</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38506</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-P (GRO)	2210	250	2000	0	105	53.51	143.49				
Surr: 1,2-Dichloroethane-d4	46.6		50		93.2	69.51	130.49				
Surr: Toluene-d8	48.8		50		97.7	69.51	130.49				
Surr: 4-Bromofluorobenzene	54.3		50		109	69.51	130.49				

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



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# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental

**Project:** Olympic

**TestCode:** TPH/P\_W

Sample ID: <b>1708254-15AGS</b>	SampType: <b>GS</b>	TestCode: <b>TPH/P_W</b>	Units: <b>µg/L</b>								
Client ID: <b>GP-8-18</b>	Batch ID: <b>A2044B</b>	TestNo: <b>SW8015</b>									
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38506</b>									
Analysis Date: <b>8/29/2017</b>											
Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits





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# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental  
**Project:** Olympic

**TestCode:** VOC\_S

Sample ID: <b>MB-2033</b>	SampType: <b>MBLK</b>	TestCode: <b>VOC_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>PBS</b>	Batch ID: <b>A2033</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/30/2017</b>	RunNo: <b>1551</b>	SeqNo: <b>38603</b>	
Analysis Date: <b>8/30/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	5									
Benzene	ND	5									
Toluene	ND	5									
Ethylbenzene	ND	5									
m,p-Xylene	ND	5									
o-Xylene	ND	5									
Naphthalene	ND	40									
Surr: 1,2-Dichloroethane-d4	210		200		107	69.51	130.49				
Surr: Toluene-d8	200		200		97.9	69.51	130.49				
Surr: 4-Bromofluorobenzene	180		200		89.8	69.51	130.49				

Sample ID: <b>LCS-2033</b>	SampType: <b>LCS</b>	TestCode: <b>VOC_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>LCSS</b>	Batch ID: <b>A2033</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/31/2017</b>	RunNo: <b>1551</b>	SeqNo: <b>38679</b>	
Analysis Date: <b>8/31/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	415	10	400	0	104	64.51	145.49				
Benzene	394	10	400	0	98.5	69.51	137.49				
Toluene	427	10	400	0	107	69.51	139.49				
Ethylbenzene	462	10	400	0	115	69.51	137.49				
m,p-Xylene	419	10	400	0	105	69.51	145.49				
o-Xylene	419	10	400	0	105	69.51	145.49				
Naphthalene	283	80	400	0	70.8	44.51	174.49				
Surr: 1,2-Dichloroethane-d4	467		400		117	69.51	130.49				
Surr: Toluene-d8	396		400		99.0	69.51	130.49				
Surr: 4-Bromofluorobenzene	401		400		100	69.51	130.49				

Sample ID: <b>1708254-11AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>VOC_S</b>	Units: <b>µg/Kg</b>
Client ID: <b>GP-9-20MSD</b>	Batch ID: <b>A2033</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/30/2017</b>	RunNo: <b>1551</b>	SeqNo: <b>38607</b>	
Analysis Date: <b>8/30/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	289	10	400	0	72.4	44.51	155.49	303	4.5	32	
Benzene	351	10	400	0	87.7	51.51	151.49	366	4.4	30	
Toluene	355	10	400	0	88.7	46.51	154.49	362	2	28	
Ethylbenzene	371	10	400	0	92.7	51.51	154.49	378	1.8	37	

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



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# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental  
**Project:** Olympic

**TestCode:** VOC\_S

Sample ID: 1708254-11AMSD	SampType: MSD	TestCode: VOC_S	Units: µg/Kg
Client ID: GP-9-20MSD	Batch ID: A2033	TestNo: SW8260B	
Prep Date: 8/30/2017	RunNo: 1551	SeqNo: 38607	
Analysis Date: 8/30/2017			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	382	10	400	0	95.6	50.51	162.49	382	0.081	34	
o-Xylene	396	10	400	0	99.1	51.51	162.49	398	0.44	40	
Naphthalene	185	80	400	0	46.3	36.51	185.49	164	12	38	
Surr: 1,2-Dichloroethane-d4	436		400		109	69.51	130.49	437	0	0	
Surr: Toluene-d8	367		400		91.7	69.51	130.49	361	0	0	
Surr: 4-Bromofluorobenzene	399		400		99.9	69.51	130.49	382	0	0	

Sample ID: 1708254-11AMS	SampType: MS	TestCode: VOC_S	Units: µg/Kg
Client ID: GP-9-20MS	Batch ID: A2033	TestNo: SW8260B	
Prep Date: 8/30/2017	RunNo: 1551	SeqNo: 38606	
Analysis Date: 8/30/2017			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	303	10	400	0	75.7	44.51	155.49				
Benzene	366	10	400	0	91.6	51.51	151.49				
Toluene	362	10	400	0	90.5	46.51	154.49				
Ethylbenzene	378	10	400	0	94.4	51.51	154.49				
m,p-Xylene	382	10	400	0	95.5	50.51	162.49				
o-Xylene	398	10	400	0	99.5	51.51	162.49				
Naphthalene	164	80	400	0	41.1	36.51	185.49				
Surr: 1,2-Dichloroethane-d4	437		400		109	69.51	130.49				
Surr: Toluene-d8	361		400		90.1	69.51	130.49				
Surr: 4-Bromofluorobenzene	382		400		95.4	69.51	130.49				

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



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# QC SUMMARY REPORT

WO#: 1708254

05-Sep-17

**Client:** Stratus Environmental

**Project:** Olympic

**TestCode:** VOC\_W

Sample ID: <b>MB-2044</b>	SampType: <b>MBLK</b>	TestCode: <b>VOC_W</b>	Units: <b>µg/L</b>
Client ID: <b>PBW</b>	Batch ID: <b>A2044</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38465</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.25									
Benzene	ND	0.25									
Toluene	ND	0.25									
Ethylbenzene	ND	0.25									
m,p-Xylene	ND	0.25									
o-Xylene	ND	0.25									
Surr: 1,2-Dichloroethane-d4	10		10		100	69.51	130.49				
Surr: Toluene-d8	9.6		10		96.0	69.51	130.49				
Surr: 4-Bromofluorobenzene	11		10		112	69.51	130.49				

Sample ID: <b>LCS-2044</b>	SampType: <b>LCS</b>	TestCode: <b>VOC_W</b>	Units: <b>µg/L</b>
Client ID: <b>LCSW</b>	Batch ID: <b>A2044</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38464</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	11.1	0.25	10	0	111	62.51	137.49				
Benzene	12	0.25	10	0	120	69.51	130.49				
Toluene	11.7	0.25	10	0	117	69.51	130.49				
Ethylbenzene	11	0.25	10	0	110	69.51	130.49				
m,p-Xylene	10.4	0.25	10	0	104	64.51	139.49				
o-Xylene	9.14	0.25	10	0	91.4	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.77		10		97.7	69.51	130.49				
Surr: Toluene-d8	9.52		10		95.2	69.51	130.49				
Surr: 4-Bromofluorobenzene	10.9		10		109	69.51	130.49				

Sample ID: <b>1708254-15AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>VOC_W</b>	Units: <b>µg/L</b>
Client ID: <b>GP-8-18MSD</b>	Batch ID: <b>A2044</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38485</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	173	1.25	50	116	114	55.51	140.49	179	3.5	30	
Benzene	57.8	1.25	50	0	116	66.51	134.49	61.6	6.5	30	
Toluene	55.6	1.25	50	0	111	37.51	130.49	60.1	7.7	30	
Ethylbenzene	52.9	1.25	50	0	106	69.51	130.49	55.4	4.7	30	
m,p-Xylene	51.2	1.25	50	0	102	64.51	139.49	53.4	4.1	30	
o-Xylene	45.2	1.25	50	0	90.3	68.51	130.49	46.5	2.9	30	

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



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# QC SUMMARY REPORT

WO#: 1708254  
 05-Sep-17

**Client:** Stratus Environmental  
**Project:** Olympic

**TestCode:** VOC\_W

Sample ID: <b>1708254-15AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>VOC_W</b>	Units: <b>µg/L</b>
Client ID: <b>GP-8-18MSD</b>	Batch ID: <b>A2044</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/29/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38485</b>	
Analysis Date: <b>8/29/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	45.7		50		91.3	69.51	130.49	48.2	0	0	
Surr: Toluene-d8	48.2		50		96.4	69.51	130.49	46.9	0	0	
Surr: 4-Bromofluorobenzene	52.5		50		105	69.51	130.49	53.9	0	0	

Sample ID: <b>1708254-15AMS</b>	SampType: <b>MS</b>	TestCode: <b>VOC_W</b>	Units: <b>µg/L</b>
Client ID: <b>GP-8-18MS</b>	Batch ID: <b>A2044</b>	TestNo: <b>SW8260B</b>	
Prep Date: <b>8/30/2017</b>	RunNo: <b>1544</b>	SeqNo: <b>38524</b>	
Analysis Date: <b>8/30/2017</b>			

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	179	1.25	50	116	126	55.51	140.49				
Benzene	61.6	1.25	50	0	123	66.51	134.49				
Toluene	60.1	1.25	50	0	120	37.51	130.49				
Ethylbenzene	55.4	1.25	50	0	111	69.51	130.49				
m,p-Xylene	53.4	1.25	50	0	107	64.51	139.49				
o-Xylene	46.5	1.25	50	0	93.0	68.51	130.49				
Surr: 1,2-Dichloroethane-d4	48.2		50		96.4	69.51	130.49				
Surr: Toluene-d8	46.9		50		93.9	69.51	130.49				
Surr: 4-Bromofluorobenzene	53.9		50		108	69.51	130.49				

**Qualifiers:** ND Not Detected at the Reporting Limit  
 R RPD outside accepted recovery limits  
 S Spike Recovery outside accepted recovery limits



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## Definition Only

WO#: 1708254

Date:

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### Definitions:

ND = Not Detected

C = Reported concentration includes additional compounds uncharacteristic of common fuels and lubricants.

D = Reporting Limits were increased due to high concentrations of non-target analytes.

H = Reporting Limits were increased due to the hydrocarbons present in the sample.

J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

K = DRO concentration may include contributions from lighter-end hydrocarbons (e.g. gasoline) that elute in the DRO range.

L = DRO concentration may include contributions from heavier-end hydrocarbons (e.g. motor oil) that elute in the DRO range.

M = Manual Integration used to determine area response.

O = Reporting Limits were increased due to sample foaming.

V = Reporting Limits were increased due to high concentrations of target analytes.

X = Reporting Limits were increased due to sample matrix interferences.

Z = DRO concentration may include contributions from lighter-end (e.g. gasoline) and heavier-end (e.g. motor oil) hydrocarbons that elute in the DRO range.

S50 = The analysis of the sample required a dilution such that the surrogate concentration was diluted below the laboratory acceptance criteria. The laboratory control sample was acceptable.

S51 = Surrogate recovery could not be determined due to the presence of co-eluting hydrocarbons.

S53 = Surrogate recovery was below laboratory acceptance limits. Probable matrix effect.

S54 = Surrogate recovery was below laboratory acceptance limits.

S55 = Surrogate recovery was above laboratory acceptance limits.



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## **Definition Only**

WO#: 1708254

Date:

---

### **Definitions:**

**Report CC's** Allan Dudding  
 Cory Gutierrez  
 Dominick Gillespie  
 Gowri Kowtha  
 Jennifer Delgado  
 Robert Kull  
 Scott Bittinger

## CHAIN-OF-CUSTODY RECORD

**Alpha Analytical, Inc.**  
 255 Glendale Ave, #21 Sparks, Nevada 89431  
 TEL: (775) 355-1044 FAX: (775) 355-0406

CA

WorkOrder: STR1708254  
 Report Due By: 05-Sep-17  
 EDD Required: YES

**Report Attention:** Scott Bittinger

**Client:**


Stratus Environmental  
 3330 Cameron Park Drive  
 Cameron Park, CA 956828861

TEL: 5306766001  
 FAX: 5306766005  
 ProjectNo: Olympic

Date Received: 28-Aug-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles			Requested Tests					Sample Remarks	
				Alpha	Sub	TAT	PNA_SIM_S	TPHP_S	TPHP_W	VOC_S	VOC_W		
STR1708254-01	GP-8-4.5	SO	8/24/2017 8:04:00 AM	1	0	5	A - SIM	A - GAS-C		A - BTXEMNaph_C			
STR1708254-02	GP-8-9.5	SO	8/24/2017 8:08:00 AM	1	0	5		A - GAS-C		A - BTXEMNaph_C			
STR1708254-03	GP-6-14.5	SO	8/24/2017 8:14:00 AM	1	0	5		A - GAS-C		A - BTXEM_C			
STR1708254-04	GP-5-16.5	SO	8/24/2017 8:20:00 AM	1	0	5		A - GAS-C		A - BTXEM_C			
STR1708254-05	GP-6-23.5	SO	8/24/2017 8:25:00 AM	1	0	5		A - GAS-C		A - BTXEM_C			
STR1708254-06	GP-8-5	SO	8/24/2017 9:12:00 AM	1	0	5	A - SIM	A - GAS-C		A - BTXEMNaph_C			
STR1708254-07	GP-8-10	SO	8/24/2017 9:14:00 AM	1	0	5		A - GAS-C		A - BTXEMNaph_C			
STR1708254-08	GP-8-20	SO	8/24/2017 9:33:00 AM	1	0	5		A - GAS-C		A - BTXEM_C			

**Comments:**

Logged in by:	Signature	Print Name	Company	Date/Time
		Scott Bittinger	Alpha Analytical, Inc.	8/28/17 10:34

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles			Requested Tests					Sample Remarks
				Alpha	Sub	TAT	PNA_SIM_S	TPH/P_S	TPHP_W	VOC_S	VOC_W	
STR1708254-09	GP-9-5	SO	8/24/2017 10:20:00 AM	1	0	5	A - SIM	A - GAS-C		A - BTXEM/Naph_C		
STR1708254-10	GP-9-10	SO	8/24/2017 10:22:00 AM	1	0	5		A - GAS-C		A - BTXEM/Naph_C		
STR1708254-11	GP-9-20	SO	8/24/2017 10:43:00 AM	1	0	5		A - GAS-C		A - BTXEM_C		
STR1708254-12	GP-7-5	SO	8/24/2017 11:18:00 AM	1	0	5	A - SIM	A - GAS-C		A - BTXEM/Naph_C		
STR1708254-13	GP-7-10	SO	8/24/2017 11:21:00 AM	1	0	5		A - GAS-C		A - BTXEM/Naph_C		
STR1708254-14	GP-7-20	SO	8/24/2017 11:50:00 AM	5	0	5		A - GAS-C		A - BTXEM_C		
STR1708254-15	GP-8-18	AQ	8/24/2017 8:26:00 AM	5	0	5		A - GAS-C		A - BTXEM_C		
STR1708254-16	GP-8-24	AQ	8/24/2017 9:37:00 AM	5	0	5		A - GAS-C		A - BTXEM_C		
STR1708254-17	GP-9-18	AQ	8/24/2017 10:35:00 AM	5	0	5		A - GAS-C		A - BTXEM_C		
STR1708254-18	GP-9-24	AQ	8/24/2017 10:49:00 AM	5	0	5		A - GAS-C		A - BTXEM_C		
STR1708254-19	GP-7-24	AQ	8/24/2017 11:58:00 AM	5	0	5		A - GAS-C		A - BTXEM_C		

Comments:

Signature	Print Name	Company	Date/Time
	Barbara Coronado	Alpha Analytical, Inc.	8/28/17 10:34

NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other



Company: Spratus Env.  
 Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 Phone Number: \_\_\_\_\_ Fax: \_\_\_\_\_



**Alpha Analytical, Inc.**  
 Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431  
 Northern CA: 9891 Ham Road, Suite C, Rancho Cordova, CA 95827  
 Southern NV: 6285 McLeod Ave, Suite 24 Las Vegas, NV 89120  
 Southern CA: 1007 E. Dominguez St., Suite C, Carson, CA 90746

Phone: 775-355-1044  
 Fax: 775-355-0408  
 Phone: 916-368-8089  
 Phone: 702-261-4848  
 Phone: 714-586-2901

10634

Page # 2 of 2

**Consultant/Client Info:** Company: Olympic Job #: \_\_\_\_\_  
 Address: 1436 Grant Ave. Job Name: Olympic  
 City, State, Zip: San Leandro P.O. #: \_\_\_\_\_

**Report Attention/Project Manager:** Name: Scott Bittinger  
 Email Address: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 Cell #: \_\_\_\_\_

**QC Deliverable Info:** EDD Required?  Yes  No EDF Required?  Yes  No  
 Global ID: T0000102256  
 Data Validation Level: III or IV

Time Sampled (HH:MM)	Date Sampled (MM/DD)	Matrix (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	Field Filtered?	# Containers** (See Key Below)	CRU	BTEX, MTBE	Naphthalene	PAH	Analysis Requested	Remarks
1118	8/24	SO	SD-7-28-24-2	GP-7-5	3H	N	1P	X	X	X	X		
1121				-13 GP-7-10				X	X	X			
1150				-14 GP-7-20				X	X				
0926		AW		-15 GP-8-18			5V	X	X				
0932				-16 GP-8-24				X	X				
1035				-17 GP-9-18				X	X				
1048				-18 GP-9-24				X	X				
1158				-19 GP-7-24				X	X				

**ADDITIONAL INSTRUCTIONS:**

I (field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0638 (c) (2).

Sampled by: <u>Alan Dudley</u> Received by: (Signature/Affiliation): <u>[Signature]</u>	Date: <u>8/25/17</u> Time: <u>1510</u>	Received by: (Signature/Affiliation): <u>[Signature]</u>	Date: <u>8/25/17</u> Time: <u>1510</u>
Requisitioned by: (Signature/Affiliation): _____	Date: _____ Time: _____	Received by: (Signature/Affiliation): _____	Date: <u>8/28/17</u> Time: <u>10:34</u>
Requisitioned by: (Signature/Affiliation): _____	Date: _____ Time: _____	Received by: (Signature/Affiliation): _____	Date: _____ Time: _____

Page 35 of 36  
 \* Key: AQ - Aqueous WA - Waste OT - Other \*\* L - Liter V - VOA S - Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other  
 NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory within a COC. The liability of the laboratory is limited to the amount paid for the report.

Billing Information:

Company: Wiggins Env.  
Address:  
City, State, Zip:  
Phone Number: Fax:



Alpha Analytical, Inc.  
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431

Phone: 775-355-1044  
Fax: 775-355-0466

Satellite Service Centers:

Northern CA: 9691 Horn Road, Suite C, Rancho Cordova, CA 95827  
Southern NV: 8255 McLeod Ave, Suite 24, Las Vegas, NV 89120  
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746

Phone: 916-366-8089  
Phone: 702-281-4848  
Phone: 714-369-2801

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Page # 1 of 2

Consultant/ Client Info:

Company: Wiggins Env.  
Address: 1436 Grand Ave  
City, State, Zip: Las Vegas NV

Job and Purchase Order Info:

Job #: 10633  
Job Name: Wiggins Env.  
P.O. #:

Report Attention/Project Manager:

Name: Scott D. Anderson  
Email Address:  
Phone #:  
Cell #:

QC Deliverable Info:

EDD Required? (Yes/No) EDF Required? (Yes/No)  
Global ID: T0600102256  
Data Validation Level: III or IV

Samples Collected from which State? (circle one) AZ CA NV WA ID DR DOD Site Other

Time Sampled (M-D-YY)	Date Sampled (M/D/YY)	Matrix (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	Field Filtered?	# Containers** (See Key Below)	Analysis Requested	Remarks
08/24/17	08/24	SD	STR106254-01	GP-6-4.5	STL	N	1P	GP-6 BTEX, MTBE Aliphatic PAH	
08/24	08/24			-02 GP-6-4.5				X X X X	
08/24	08/24			-02 GP-6-14.5				X X X X	
08/24	08/24			-04 GP-6-19.5				X X X X	
08/25	08/25			-05 GP-6-23.5				X X X X	
09/12	09/12			-06 GP-8-5				X X X X	
09/14	09/14			-07 GP-8-10				X X X X	
09/13	09/13			-08 GP-8-20				X X X X	
10/20	10/20			-09 GP-4-5				X X X X	
10/22	10/22			-10 GP-4-16				X X X X	
10/23	10/23			-11 GP-4-20				X X X X	

ADDITIONAL INSTRUCTIONS:

(Field sampler) attest to the validity and authenticity of this sample(s). I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action. NAC 445.0638 (c) (2).

Sampled By: <u>Alan Dudley</u>	Date: <u>8/25/17</u>	Time: <u>15:00</u>	Received by: (Signature/Affiliation): <u>[Signature] / Alpha</u>	Date: <u>8/25/17</u>	Time: <u>15:00</u>
Relinquished by: (Signature/Affiliation): <u>[Signature]</u>	Date: <u>8/25/17</u>	Time: <u>10:34</u>	Received by: (Signature/Affiliation): <u>[Signature]</u>	Date: <u>8/25/17</u>	Time: <u>10:34</u>

Page 36 of 36

\* Key: AQ - Aqueous WA - Waste OT - Other \*\* L - Liter V - VOA S - Soil Jar O - Orbo T - Tedlar B - Brass P - Plastic OT - Other  
NOTE: Samples are discarded 60 days after sample receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense. This report for the analysis of the above samples is applicable only to those samples received by the laboratory in this COC. The liability of the laboratory is limited to the amount paid for the report.

**APPENDIX D**

**GEOTRACKER DATA UPLOAD CONFIRMATION  
SHEETS**

STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A EDF FILE

## SUCCESS

**Processing is complete. No errors were found!  
Your file has been successfully submitted!**

<b><u>Submittal Type:</u></b>	<b>EDF</b>
<b><u>Report Title:</u></b>	<b>Site Assessment Report</b>
<b><u>Report Type:</u></b>	<b>Site Assessment Report</b>
<b><u>Facility Global ID:</u></b>	<b>T0600102256</b>
<b><u>Facility Name:</u></b>	<b>OLYMPIC STATION</b>
<b><u>File Name:</u></b>	<b>Final_v2.zip</b>
<b><u>Organization Name:</u></b>	<b>Stratus Environmental, Inc.</b>
<b><u>Username:</u></b>	<b>STRATUS NOCAL</b>
<b><u>IP Address:</u></b>	<b>50.192.223.97</b>
<b><u>Submittal Date/Time:</u></b>	<b>10/2/2017 9:46:21 AM</b>
<b><u>Confirmation Number:</u></b>	<b>9099890351</b>

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)

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STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A GEO\_BORE FILE

**SUCCESS**

Your GEO\_BORE file has been successfully submitted!

<b><u>Submittal Type:</u></b>	<b>GEO_BORE</b>
<b><u>Facility Global ID:</u></b>	<b>T0600102256</b>
<b><u>Field Point:</u></b>	<b>GP-6</b>
<b><u>Facility Name:</u></b>	<b>OLYMPIC STATION</b>
<b><u>File Name:</u></b>	<b>Additional Subsurface Investigation Report.pdf</b>
<b><u>Organization Name:</u></b>	<b>Stratus Environmental, Inc.</b>
<b><u>Username:</u></b>	<b>STRATUS NOCAL</b>
<b><u>IP Address:</u></b>	<b>50.192.223.97</b>
<b><u>Submittal Date/Time:</u></b>	<b>10/31/2017 3:36:12 PM</b>
<b><u>Confirmation Number:</u></b>	<b>1970587372</b>

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STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A GEO\_BORE FILE

**SUCCESS**

Your GEO\_BORE file has been successfully submitted!

<b><u>Submittal Type:</u></b>	<b>GEO_BORE</b>
<b><u>Facility Global ID:</u></b>	<b>T0600102256</b>
<b><u>Field Point:</u></b>	<b>GP-7</b>
<b><u>Facility Name:</u></b>	<b>OLYMPIC STATION</b>
<b><u>File Name:</u></b>	<b>GP-7.pdf</b>
<b><u>Organization Name:</u></b>	<b>Stratus Environmental, Inc.</b>
<b><u>Username:</u></b>	<b>STRATUS NOCAL</b>
<b><u>IP Address:</u></b>	<b>50.192.223.97</b>
<b><u>Submittal Date/Time:</u></b>	<b>10/31/2017 3:39:52 PM</b>
<b><u>Confirmation Number:</u></b>	<b>7434363007</b>

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STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A GEO\_BORE FILE

**SUCCESS**

Your GEO\_BORE file has been successfully submitted!

<b><u>Submittal Type:</u></b>	<b>GEO_BORE</b>
<b><u>Facility Global ID:</u></b>	<b>T0600102256</b>
<b><u>Field Point:</u></b>	<b>GP-8</b>
<b><u>Facility Name:</u></b>	<b>OLYMPIC STATION</b>
<b><u>File Name:</u></b>	<b>GP-8.pdf</b>
<b><u>Organization Name:</u></b>	<b>Stratus Environmental, Inc.</b>
<b><u>Username:</u></b>	<b>STRATUS NOCAL</b>
<b><u>IP Address:</u></b>	<b>50.192.223.97</b>
<b><u>Submittal Date/Time:</u></b>	<b>10/31/2017 3:40:52 PM</b>
<b><u>Confirmation Number:</u></b>	<b>7463653802</b>

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STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A GEO\_BORE FILE

**SUCCESS**

Your GEO\_BORE file has been successfully submitted!

<b><u>Submittal Type:</u></b>	<b>GEO_BORE</b>
<b><u>Facility Global ID:</u></b>	<b>T0600102256</b>
<b><u>Field Point:</u></b>	<b>GP-9</b>
<b><u>Facility Name:</u></b>	<b>OLYMPIC STATION</b>
<b><u>File Name:</u></b>	<b>GP-9.pdf</b>
<b><u>Organization Name:</u></b>	<b>Stratus Environmental, Inc.</b>
<b><u>Username:</u></b>	<b>STRATUS NOCAL</b>
<b><u>IP Address:</u></b>	<b>50.192.223.97</b>
<b><u>Submittal Date/Time:</u></b>	<b>10/31/2017 3:41:50 PM</b>
<b><u>Confirmation Number:</u></b>	<b>8807428181</b>

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