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22 May 2018
File No. 128159-003

United States Environmental Protection Agency
Region IX
RCRA Permit Section
75 Hawthorne Street (LND-4-2)
San Francisco, California 94105

Attention: Madison Sanders-Curry

Subject: Focused ISCO Injection and Monitoring Report
Former Plymouth Tube Company Facility
6573 West Willis Road
Chandler, Arizona

Dear Ms. Sanders-Curry:

Haley & Aldrich, Inc. (Haley & Aldrich), on behalf of the Plymouth Tube Company (Plymouth Tube), has prepared the enclosed "Focused ISCO (In-situ Chemical Oxidation) Injection and Monitoring Report" (ISCO Report) for the Former Plymouth Tube Company Facility located at 6573 West Willis Road in Chandler, Arizona. The ISCO Report has been prepared pursuant to a meeting held on 4 August 2016 between the United States Environmental Protection Agency (USEPA), Gila River Indian Community Department of Environmental Quality, and representatives of Plymouth Tube as memorialized in the 23 August 2016 USEPA Meeting Summary entitled "Plymouth Tube 4 August 2016 Final Remedy Meeting" prepared by Angela Sandoval, USEPA Project Manager. This ISCO Report is also required pursuant to the USEPA "partial" approval of the Groundwater Focused ISCO portion of the "Final – Corrective Measures Implementation Soil Vapor Extraction System Closure and Focused ISCO and MNA (Monitored Natural Attenuation) Work Plans" prepared by Haley & Aldrich dated 26 April 2017. The ISCO Report has also been prepared pursuant to the 28 December 2007 Unilateral Administrative Order (UAO), USEPA Docket No. RCRA (Resource Conservation and Recovery Act)-7003-09-2008-0002, and the 17 April 2017 Plymouth Tube, USEPA ID: AZD020691507, First Amendment to Unilateral Administrative Order, Docket No. RCRA-7003-09-2008-0002 (Amended UAO).

One hard copy and one electronic copy of the ISCO Report are being submitted to you for review and approval. If you have any questions related to this submittal, please contact the undersigned at 602.760.2461.

Sincerely yours,
HALEY & ALDRICH, INC.

Bruce C. Travers, R.G.
Senior Associate Hydrogeologist

Elizabeth Bishop
Technical Specialist

Copies to: Mr. Jim Jackson, CFO, Plymouth Tube Company (electronic copy)
Mr. Steven Lemon, Esq., Jones Lemon & Graham, LLP (electronic copy)
Mr. Manny Fontes, GRIC DEQ (electronic copy and two hard copies)
Ms. Esther Manuel, LBDA (one hard copy and one electronic copy)
Ms. Elizabeth Bishop, Haley & Aldrich (electronic copy)

Enclosures:
Focused ISCO Injection and Monitoring Report, Former Plymouth Tube Company Facility, 6573 West Willis Road, Chandler, Arizona

www.haleyaldrich.com

FOCUSED ISCO INJECTION AND MONITORING REPORT
FORMER PLYMOUTH TUBE COMPANY FACILITY
6573 WEST WILLIS ROAD
CHANDLER, ARIZONA

by
Haley & Aldrich, Inc.
Phoenix, AZ

REGISTERED GEOLOGIST
CERTIFICATE NO.
26776
BRUCE C.
TRAVERS
Date Signed 5/22/18
ARIZONA, U.S.A.
Expires 03/31/20

for
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File No. 128159-003
May 2018

Table of Contents

		Page
List of Tables		**iii**
List of Figures		**iii**
1.	**Introduction**	**1**
2.	**Scope of Activities**	**2**
2.1	ISCO BENCH SCALE TESTING AND RESULTS	3
2.1.1	Bench Scale Test Objectives	3
2.1.2	Bench Scale Test Summary	3
2.2	INSTALLATION OF INJECTION WELL ISCO-1	4
2.2.1	Pre-field Activities	4
2.2.2	Installation of Injection Well ISCO-1	4
2.2.3	Injection Well Development	6
2.2.4	Initial Injection Well Sampling	6
2.2.5	Management of Investigation Derived Waste	6
2.3	WELL SURVEYING	7
3.	**ISCO Injection Activities**	**8**
3.1	FOCUSED ISCO INJECTION	8
4.	**Post-ISCO Injection Groundwater Sampling Results**	**9**
4.1	ISCO + 1 MONTH	10
4.1.1	Monitor Well PT-2S	10
4.1.2	Monitor Well PT-3	10
4.2	ISCO + 2 MONTH	11
4.2.1	Monitor Well PT-2S	11
4.2.2	Monitor Well PT-3	11
4.3	ISCO + 3 MONTH	11
4.3.1	Monitor Well PT-2S	11
4.3.2	Monitor Well PT-3	11
4.3.3	Monitor Well LB-7R	11
4.3.4	ISCO-1 SHALLOW	11
4.3.5	ISCO-1 DEEP	12
4.4	ISCO + 6 MONTH	12
4.4.1	Monitor Well PT-2S	12
4.4.2	Monitor Well PT-3	12
4.4.3	Monitor Well LB-7R	12
4.4.4	ISCO-1 SHALLOW	12
4.4.5	ISCO-1 DEEP	12

Table of Contents (cont'd)

		Page
4.5	METAL AND GENERAL CHEMISTRY RESULTS	12
4.5.1	Monitor Well PT-2S	12
4.5.2	Monitor Well PT-3	13
4.5.3	Monitor Well LB-7R	14
4.5.4	ISCO-1 SHALLOW	14
4.5.5	ISCO-1 DEEP	15
5.	**Data Verification**	**17**
6.	**Evaluation of Factors of Success**	**18**
7.	**Conclusions and Recommendations**	**23**
8.	**References**	**24**

Tables
Figures
Appendix A – PRIMA's Bench-Scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs
Appendix B – ISCO-1 Drilling and Installation Photographs
Appendix C – ISCO-1 Field Logs
Appendix D – Laboratory Reports
Appendix E – Well Survey Data
Appendix F – Data Quality Review

List of Tables

Table No.	Title
I	Summary of Volatile Organic Compound Results
II	Summary of Metal and General Chemistry Results

List of Figures

Figure No.	Title
1	Site Location Map
2	Site Area of Interest
3	As-Built Well Diagram Injection Well ISCO-1

1. Introduction

Haley & Aldrich, Inc. (Haley & Aldrich), on behalf of the Plymouth Tube Company (Plymouth Tube), has prepared this Focused ISCO (In-situ Chemical Oxidation) Injection and Monitoring Report (ISCO Report) to document the ISCO Bench Scale Testing and Results, the installation of the injection well ISCO-1, and the Focused ISCO injection activities and monitoring results for the Former Plymouth Tube Company Facility located at 6573 West Willis Road in Chandler, Arizona (Site). Figure 1 presents the Site location map.

During the 4 August 2016 Final Remedy Meeting (U.S. Environmental Protection Agency [USEPA], 2016a) it was agreed to by USEPA and Plymouth Tube that the following items would comprise the Final Remedy for groundwater:

- The Final Remedy for groundwater will consist of Focused ISCO followed by Monitored Natural Attenuation (MNA).
- ISCO would be performed at two well sites; the existing monitor well LB-7R and a new injection well (ISCO-1) located approximately 10 to 15 feet west of monitor well LB-7R.
- A Bench Scale Test would be performed to determine the appropriate oxidant and the corresponding dosing concentration.
- After the ISCO injection, increased sampling frequency at monitor wells PT-2S and PT-3 will be conducted. Sampling will also be conducted at monitor well LB-7R and at the injection well ISCO-1.
- The “factors of success” for the ISCO injection will be determined and presented.
- Criteria for moving from the ISCO phase to the MNA phase will be established and a report documenting the conditions that support the implementation of the MNA phase will be submitted.
- Quarterly Groundwater Monitoring Events will continue until the MNA phase is approved.
- The Human Health Risk Assessment (HHRA) will be updated, if necessary, prior to moving to the MNA phase.

The various tasks and activities related to the Focused ISCO groundwater corrective measure were presented in the 26 April 2017 Final – Corrective Measures Implementation, Soil Vapor Extraction System Closure and Focused ISCO and MNA Work Plans (CMI Work Plans) prepared by Haley & Aldrich (Haley & Aldrich, 2017). The USEPA provided approval of the Groundwater Focused ISCO portion of the CMI Work Plans in a letter dated 9 June 2017 to Bruce Travers, R.G. of Haley & Aldrich (technical consultant for Plymouth Tube) from Angela Sandoval, P.E., Environmental Engineer/Project Manager for the USEPA (USEPA, 2017).

A Focused ISCO Update dated 8 January 2018 was provided to the USEPA. This Focused ISCO Update provided information on the ISCO injection and the data collected during the ISCO + 1 Month, + 2 Months, and + 3 Months sampling events (Haley & Aldrich, 2018).

2. Scope of Activities

The purpose of the Focused ISCO portion of the CMI Work Plans is to present the components, method of implementation, monitoring and sampling protocols, analytical results, and reporting requirements of the Final Remedy for groundwater at the Site. The proposed Final Remedy was presented in the Corrective Measures Study (CMS) Report (NV5, 2016). USEPA stated in their 29 August 2016 memorandum entitled "Progress Report Concerning Plymouth Tube Corrective Action Activities" that the "*Corrective Measures Study (CMS) was conducted and a final Report submitted and are deemed appropriate. However, any final remedy should address vadose zone soil vapor extraction to assure protection of human health*" (USEPA, 2016b). The vadose zone soil vapor extraction system closure will be addressed in a separate document. The USEPA Final Remedy Meeting memo (USEPA, 2016a) presented the following key points and technical discussions for the groundwater Final Remedy:

- Proposed Final Remedy for groundwater will consist of Focused ISCO followed by MNA.
- ISCO will be performed in the vicinity of Gila River Indian Community (GRIC) monitor well LB-7 utilizing Plymouth Tube monitor well LB-7R and a proposed injection well (ISCO-1), which will be located approximately 10 to 15 feet west of abandoned monitor well LB-7.
- A pilot study (Bench Scale Test) will be performed to determine which oxidant is most effective to address the compounds of concern (COCs) and the proposed dosing concentrations to be used in the Final Remedy.
- Increased sampling frequency will be conducted at monitor well PT-2S and PT-3 after ISCO application(s) to monitor the ISCO effects on the trichloroethene (TCE) plume concentrations.
- Identify Final Remedy "factors of success" that can be measured or deduced from the ISCO implementation and monitoring.
- Establish criteria for the measurement and rationalization for moving from the ISCO application to MNA.
- Identify a contingency plan/future action(s) if the "factors of success" are inconclusive and submit a report to USEPA outlining those proposed actions.
- Quarterly Groundwater Monitoring Events will continue until the MNA program is approved and implemented.
- If necessary, revise/update the HHRA (Appendix C to the RCRA (Resource Conservation and Recovery Act) Facility Investigation Report [NV5, 2015]) prior to moving to MNA.
- Address MNA implementation details.

The status/completion of each of the above items is discuss in Section 7 Conclusions and Recommendations.

The following presents a summary and the results of the primary activities associated with the Focused ISCO implementation.

2.1 ISCO BENCH SCALE TESTING AND RESULTS

Haley & Aldrich subcontracted PRIMA Environmental (PRIMA) in El Dorado Hills, California to conduct the Bench Scale Test. To conduct the Bench Scale Test, Haley & Aldrich provided 10 gallons of aquifer material that had been collected during the drilling of Site monitor wells and 20 liters of groundwater that was collected from monitor well LB-7R to PRIMA. The following describes the ISCO Bench Scale Test procedures and results.

2.1.1 Bench Scale Test Objectives

The Bench Scale Test (PRIMA Environmental, 2017) was conducted to evaluate potential reduction in groundwater concentrations of TCE and 1,4-Dioxane, the primary COCs at the Site, from the injection of oxidants including potassium permanganate ($KMnO_4$), iron activated persulfate (AP-Fe), and alkaline activated persulfate (AP-pH). Specific goals of the Bench Scale Test were to:

- Measure the soil oxidant demand/persistence for $NaMnO_4$, AP-Fe, and AP-pH;
- Determine whether COCs can be destroyed by each oxidant and estimate the oxidant concentration required; and
- Assess the ability of soil to buffer changes in pH associated with the use of activated persulfate (AP).

2.1.2 Bench Scale Test Summary

Bench-scale treatability testing was conducted on soil and groundwater from the Site to evaluate the suitability of AP and $KMnO_4$ as the oxidant for the Focused ISCO application to destroy the primary COCs at the Site. Two forms of AP were evaluated: AP-pH and AP-Fe. Testing measured soil oxidant demand (SOD) for each oxidant, assessed the ability of each oxidant to destroy the primary COCs, and assessed the ability of soil to mitigate changes in pH associated with the use of AP.

PRIMA's laboratory testing demonstrated that AP-pH, AP-Fe, and $KMnO_4$ can destroy TCE and 1,4-Dioxane, but the efficacy varied with oxidant and/or oxidant concentration. Low dose (1 gram per liter [g/L] Sodium Persulfate [SP]) AP-pH and AP-Fe tests destroyed 17 to 60 percent TCE and 56 to 70 percent of 1,4-Dioxane within 28 days. In contrast, high dose tests (10 g/L SP), destroyed over 17 to 60 percent TCE and 96 percent of 1,4-Dioxane within 7 days. For $KMnO_4$, TCE was not detected in any sample, while 18 percent of 1,4-Dioxane was destroyed within 28 days in the low dose (0.25 g/L $KMnO_4$) test and 43 percent was destroyed in the high dose test (1 g/L $KMnO_4$). In all tests, oxidant was still present at 28 days, indicating that additional reduction in the COC concentrations would likely occur given a longer contact time.

Several non-target volatile organic compounds (VOCs), including trihalomethanes and 1,1,2-trichloroethane, were detected in the high dose AP-Fe and both of the $KMnO_4$ tests, though not all compounds were detected in all cases. Concentrations in the $KMnO_4$ tests were below 5 micrograms per liter (µg/L) and were most likely present in untreated groundwater but masked by elevated concentrations of non-target VOCs. Concentrations of some compounds were notably higher (up to 820 µg /L) in the AP-Fe tests. Such compounds are reactive intermediates and are expected to be destroyed given longer reaction times.

Treatment with AP-pH increased the pH to above 11, but the pH should return to near-pretreatment conditions once SP is consumed. Treatment with the high dose AP-Fe decreased pH to 2.2. Treatment with $KMnO_4$ did not affect pH.

Soil had a mild ability to buffer acid and a moderate ability to buffer base. Soil buffered between 1 and 10 millimoles (mmol) H+/kilogram (kg) soil, implying that it can neutralize the acid generated by decomposition of less than 1.2 grams (g) SP/kg soil. Soil also buffered between 10 and 100 mmol OH-/kg soil, indicating that more than 10 mmol OH-/kg soil (1.3 milliliter [mL] of 25 percent Sodium Hydroxide [NaOH]/kg soil) must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Based on the results of this Bench Scale study, PRIMA recommended that AP-pH or $KMnO_4$ be considered for use. Both reacted with the COCs, though treatment of 1,4-Dioxane will likely be faster using AP-pH. PRIMA suggests not using AP-Fe because this oxidant could potentially significantly reduce groundwater pH.

The PRIMA's Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs report (PRIMA Bench Scale Testing Report) is presented in Appendix A.

Haley & Aldrich selected AP-pH as the oxidant to be used for the ISCO injections. AP-pH proved in the Bench Scale Test to be the most effective of the oxidants tested in destroying both TCE and 1,4-Dioxane.

2.2 INSTALLATION OF INJECTION WELL ISCO-1

Haley & Aldrich subcontracted with Cascade Drilling and Technical Services, Inc. (Cascade) an Arizona licensed well drilling company to drill, install, and develop the ISCO injection well ISCO-1 (Figure 2). Haley & Aldrich geologists oversaw the field activities. Plymouth Tube secured an easement for the ISCO well location, as well as an easement for the monitor well PT-2S and PT-2D location, from Lone Butte Development Corporation (Lone Butte) (Figure 2). The following presents the procedures conducted for the ISCO injection well drilling, installation, development, and sampling.

2.2.1 Pre-field Activities

Prior to initiating field activities, Haley & Aldrich submitted a *Notice of Intent to Drill a Groundwater Well* to the GRIC Department of Environmental Quality Water Quality Division, and a *Letter of Intent* to Lone Butte for the installation of the ISCO injection well (Figure 2).

Haley & Aldrich staked the drilling location and contacted Blue Stake to clear the drilling location for public utilities. Prior to the start of drilling, Haley & Aldrich also contracted The Locator, Inc., a private utility location service subcontractor, to clear the staked drilling location of utilities prior to the initiation of intrusive activities.

2.2.2 Installation of Injection Well ISCO-1

Haley & Aldrich conducted oversight of the drilling and installation of injection well ISCO-1 during the period of 27 through 29 June 2017. The injection well is located approximately 15 feet west of the abandoned GRIC monitor well LB-7 (Figure 2).

Haley & Aldrich subcontracted Cascade to drill, install, and develop the injection well ISCO-1 using the Sonic drilling method. The injection well consists of two depth-specific, 2-inch diameter, polyvinyl chloride (PVC) ISCO injection points. The injection well is designed to provide two depth intervals where the selected ISCO oxidant (AP-pH) would be injected into groundwater where elevated TCE and 1,4-Dioxane concentrations are believed to reside. The injection well was constructed by first advancing the 10-inch Sonic bit and temporary outer casing to a depth of approximately 65 feet below ground surface (bgs). The competent clay (a previously defined confining unit) was first encountered in this borehole at a depth of approximately 60 feet bgs. The temporary 10-inch casing was then landed into the competent clay to minimize the potential for cross-contamination between the vadose zone and the underlying aquifer. Cascade then drilled within the 10-inch temporary casing with a 9-inch bit and casing to a depth of approximately 105 feet bgs (total depth). Photographs taken to document the drilling activities are presented in Appendix B.

After drilling the borehole to the total depth of 105 feet bgs, Cascade installed the first depth-specific 2-inch diameter PVC injection point. The first injection point (ISCO-1 DEEP) consists of Schedule 40 PVC with 0.020-inch slotted screen, with a threaded end cap, installed between approximately 103 and 93 feet bgs, and Schedule 40 PVC blank casing with a threaded top cap installed between approximately 93 feet bgs and ground surface. The second injection point (ISCO-1 SHALLOW) consists of Schedule 40 PVC with 0.020-inch slotted screen, with a threaded end cap, installed between approximately 90 and 80 feet bgs, and Schedule 40 PVC blank casing with a threaded top cap installed between approximately 80 feet bgs and ground surface (Figure 3).

The deep injection point (ISCO-1 DEEP) filter pack consists of washed ⅜-inch pea gravel emplaced between approximately 105 and 92.5 feet bgs. A hydrated bentonite chip seal was emplaced above the pea gravel from approximately 92.5 and 90 feet bgs. The shallow injection point (ISCO-1 SHALLOW) filter pack also consists of washed ⅜-inch pea gravel and was emplaced between approximately 90 and 79.5 feet bgs. A hydrated bentonite chip seal was emplaced above the pea gravel from approximately 79.5 to 73 feet bgs. A BENSEAL® grout was then emplaced from approximately 73 to 25 feet bgs. A neat cement grout was them emplaced above the BENSEAL grout from approximately 25 to 1 foot bgs. A 12-inch flush traffic rated vault was installed into a 6-foot by 6-foot by 4-inch concrete pad at ground surface (Figure 3).

During drilling, Haley & Aldrich staff prepared lithologic descriptions of material derived from each 5-foot interval and at formation changes (Appendix C). The soil descriptions were identified using visual-manual procedures of American Society for Testing Materials Standard D2488 for guidance, which is based on the Unified Soil Classification System.

Haley & Aldrich also monitored for organic vapors in the drilling area (i.e., breathing zone) using a photoionization detector (PID) equipped with a 10.6 electron volt lamp for screening VOCs. The PID was calibrated against isobutylene gas having a concentration of 100 parts per million each day prior to the initiation of drilling.

Haley & Aldrich also monitored soil samples for organic vapors by placing soil cuttings in a plastic bag, breaking up the soil as needed, and monitoring the headspace. Soil PID measurements were recorded on the field log sheets (Appendix C).

2.2.3 Injection Well Development

ISCO-1 SHALLOW and DEEP were developed on 6 June 2017 by Cascade. Haley & Aldrich conducted oversight of the development of the two injection points at ISCO-1. Cascade utilized a combination of surging and bailing techniques using a small bailer followed by active pumping using a small submersible pump during each injection point development. Development continued until the purged water was clear and sediment free. Purged development water was collected in a 55-gallon drum and transferred to the plastic totes located at the Plymouth Tube Remediation Compound located on the Kaiser property.

2.2.4 Initial Injection Well Sampling

On 11 June 2017, 5 days after well development and prior to the ISCO injection, ISCO-1 SHALLOW and DEEP were sampled by Haley & Aldrich. Groundwater samples were collected using the same low-flow sampling technique employed during the Quarterly Groundwater Monitoring Events and as presented in the CMI Work Plans (Haley & Aldrich, 2017). Groundwater samples were collected at a depth of 85 feet bgs at ISCO-1 SHALLOW and at 98 feet bgs at ISCO-1 DEEP (Appendix C).

Initial groundwater samples were collected into the following laboratory-certified sample containers:

- Injection Points
  - VOCs using USEPA Test Method 8260B. Three 40-mL volatile organic analysis (VOA) vials preserved with hydrochloric acid.
  - 1,4-Dioxane using USEPA Test Method 8260B SIM. Three 40-mL VOA vials preserved with hydrochloric acid.

The groundwater samples were transported to SGS Accutest (SGS), an Arizona Department of Health Services (ADHS) certified laboratory, under standard chain-of-custody protocol (Appendix C).

The following is a summary of the initial groundwater sampling analytical results:

- ISCO-1 SHALLOW: TCE, 1,1-dichloroethene (1,1-DCE), tetrachloroethene (PCE) and 1,4-Dioxane were detected above the laboratory method detection levels (MDLs) at concentrations of 799, 166, 0.57, and 92.3 µg/L, respectively. The detected concentrations of TCE and 1,1-DCE were above their respective maximum contaminant levels (MCLs) of 5 and 7 µg/L, respectively. The detected concentration of PCE was below its respective MCL of 5 µg/L. There is currently no MCL for 1,4-Dioxane (Table I).
- ISCO-1 DEEP: TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 238, 44.9, and 18.8 µg/L, respectively. The detected concentrations of TCE and 1,1-DCE were above their respective MCLs of 5 and 7 µg/L, respectively. There is currently no MCL for 1,4-dioxane (Table I).

Laboratory reports for the initial injection well groundwater sampling are presented in Appendix D.

2.2.5 Management of Investigation Derived Waste

The storage and disposal of investigation derived waste was performed in accordance with GRIC and USEPA regulations. Soil cuttings were stored in a 20-cubic yard, closed top container. Development water was stored in the plastic totes at the Plymouth Tube Remediation Compound located on the

Kaiser property. Soil cuttings were sampled and analyzed for VOCs, 1,4-Dioxane and the RCRA 8 metals. Soils were handled by Overley's Environmental & Industrial Services and were disposed of at the Butterfield Station Landfill. Development water is being handled with the sampling and disposal of the purge water generated during the Quarterly Groundwater Monitoring Events and the knock-out water generated during operation of the soil vapor extraction system.

2.3 WELL SURVEYING

Haley & Aldrich subcontracted the A-Team, an Arizona licensed surveyor, to survey the injection point locations and the elevation of the tops of the 2-inch injection points. The surveying is consistent with GRIC Resolution GR-18-97, which calls for data in NAD 83 and all elevation data in NADV 29. The injection well survey data are presented as Appendix E.

3. ISCO Injection Activities

Haley & Aldrich subcontracted with Cascade Technical Services (Cascade TS) to conduct ISCO injections within the permanent injection wells ISCO-1 SHALLOW, ISCO-1 DEEP, and monitor well LB-7R (Figure 2). Haley & Aldrich technical specialists oversaw the field activities conducted over 5 days in September 2017. The following presents the procedures conducted for the ISCO injection activities.

3.1 FOCUSED ISCO INJECTION

The selected oxidant identified in the PRIMA Bench Scale Test Report is AP activated by sodium hydroxide, an alkaline activator. Haley & Aldrich contracted Cascade TS as the ISCO injection contractor. Cascade TS provided the injection trailer, injection lines, valves and gauges, and the sodium persulfate and the sodium hydroxide.

A total of 23,142 pounds of sodium persulfate, 31,150 pounds of a 25 percent sodium hydroxide solution, and 8,329 gallons of water were mixed together in batches and injected within injection well ISCO-1 SHALLOW, ISCO-1 DEEP, and monitor well LB-7R. ISCO-SHALLOW and ISCO-DEEP received 2,520 gallons of the 25 percent AP solution respectively, and LB-7R received 6,510 gallons of the 25 percent AP solution. These ISCO injection activities were conducted over 5 work days; from 11 to 15 September 2017.

Each ISCO injection batch of AP consisted of 296.5 pounds of persulfate, 399 pounds (37 gallons) of 25 percent NaOH and 106 gallons of water. The AP makeup water was obtained from Lone Butte through a metered connection at a fire hydrant located on the Kaiser property. A table of the injection volumes per injection well is provided below.

Well ID:	25 % AP Solution			25% AP Solution Injected (gallons)	Flush Water (gallons)	Total Injected Gallons
	Sodium Persulfate (pounds)	25% NaOH (pounds)	Water (gallons)			
ISCO-1 SHALLOW	5,049.2	6,796.4	1,817.2	2,520	125	2,645
ISCO-1 DEEP	5,049.2	6,796.4	1,817.2	2,520	125	2,645
LB-7R	13,043.7	17,494.3	4,694.6	6,510	150	6,660

Notes:
% = percent
AP = Activated Persulfate
NaOH = Sodium Hydroxide

The injection event was successful in emplacing the designed amount of AP. The injection was completed using slip-cap pressure fittings on LB-7R and using cam fittings on ISCO-1 SHALLOW and ISCO-1 DEEP. The injections were completed while monitoring the pressure at each injection well, monitoring the flow rate, and observing the surface for potential daylighting material. No daylighting occurred during the injection event. Pressures were maintained between 0 and 30 pounds per square inch, and injection flow rates remained below 10 gallons per minute.

4. Post-ISCO Injection Groundwater Sampling Results

The following presents a description of, and groundwater analytical results from, the Focused ISCO injection and post-ISCO monitoring and reporting activities that were discussed during the 4 August 2016 Final Remedy Meeting, memorialized in the "Plymouth Tube August 4, 2016 Final Remedy Meeting Memo" (USEPA, 2016a) and presented in the USEPA approved portion (USEPA, 2017) of the CMI Work Plans (Haley & Aldrich, 2017).

The post-ISCO sampling events included:

- Groundwater monitoring at PT-2S and PT-3 at 1 month, 2 months, 3 months, and 6 months and at LB-7R, ISCO-1 SHALLOW, and ISCO-1 DEEP at 3 months and 6 months post-ISCO injection for:
  - VOCs;
  - Sulfate;
  - Total and dissolved iron;
  - Dissolved gases included carbon dioxide, methane, ethene, and ethane;
  - Chloride; and
  - Sodium.

Post-ISCO groundwater sampling and analysis was conducted using the same protocols conducted during historic quarterly groundwater monitoring events. Depth to groundwater was measured in Plymouth Tube groundwater monitor wells PT-2S, PT-3, ISCO-1 DEEP and SHALLOW, and LB-7R using a calibrated and decontaminated electric water level sounder. Depth to groundwater was measured from the top of the well casing (north side) to the nearest 0.01 foot.

The low-flow sampling method involves the use of a QED Sample Pro® MicroPurge Bladder Pump (pump), QED MP-10 control box and compressed gas cylinders. Groundwater samples were collected at approximately the mid-point of the saturated screen interval. Prior to submerging the decontaminated pump at each monitor well/injection point, the water level was measured using an electric water level sounder to verify the depth to water.

The pump was slowly lowered into the monitor/injection well to minimize disturbance to the water column until the intake port had reached the desired sample collection depth. Groundwater was purged from each monitor well/injection point at an approximate rate of 200 milliliters per minute (mL/min). Following purging, a groundwater sample was collected at an approximate pumping rate of 100 mL/min.

For each sampled monitor/injection point well, a water quality data instrument (YSI 556 MPS) with a flow-through cell was used to continuously measure the field water quality parameters: pH, temperature, dissolved oxygen (DO), redox potential (Redox), and specific electrical conductance every 3 to 5 minutes. Pre-sample purging was continued until water quality parameters stabilized for three successive readings collected at every 3- to 5-minute intervals, which is the approximate time required to fill the flow-through cell. Pre-sample purging was continued until water quality standards stabilized within approximately 5 percent of the previous three readings, and +/- 0.1 standard units for pH, +/- 4 degrees Fahrenheit for temperature, +/- 3 percent of the last reading for specific electrical conductance, +/- 10 millivolt (mV) for Redox, +/- 10 percent for DO, and until the water appeared clear and free of sediment. These data were recorded on a Well Sampling Record for each monitor well (Appendix C).

Upon stabilization of the water quality parameters, the flow-through cell was disconnected, and the groundwater samples were collected from the outlet tubing. New polyethylene tubing was used in each

monitor well to transmit the water from the pump to the surface for collection. Groundwater samples were collected in laboratory-certified sample containers and analyzed for the following analytes using the designated testing methods:

- Post-ISCO Groundwater Sampling Analyses
  - VOCs using USEPA Test Method 8260C.
  - 1,4-Dioxane using USEPA Test Method 8260B SIM.
  - Sulfate using USEPA Test Method 300.0.
  - Total iron using USEPA Test Method SW-846 6010/6020.
  - Dissolved iron using USEPA Test Method SW-846 6010/6020.
  - Methane, ethene, and ethane using USEPA Test Method Modified RSK 175.
  - Chloride using USEPA Test Method 300.0.
  - Sodium using USEPA Test Method 6010/6020.

During each post-ISCO sampling event, Haley & Aldrich designated one monitor well/injection point for the collection of a duplicate sample for VOC analysis in order to evaluate laboratory performance. A trip blank sample also accompanied the groundwater samples for each day of sampling and was analyzed for VOCs. Field equipment blanks were also collected, as appropriate, and analyzed for VOCs using USEPA Test Method 8260B. Laboratory analytical data were evaluated with a Stage 2A Data Validation – Level II Data Deliverable (Appendix F).

Each sample container was labeled and enclosed in bubble wrap and placed in a cooler with wet ice for transport to SGS, an ADHS certified laboratory, under standard chain-of-custody protocol.

The depth to water was again measured at the conclusion of sampling. These measurements documented that minimal water level drawdown was maintained throughout the sampling effort.

The field activities were performed in accordance with the existing project sampling and analysis plan and quality assurance project plan and other project planning documents (Geomatrix, 2007). Laboratory reports are presented in Appendix D.

4.1 ISCO + 1 MONTH

The following presents the COC concentrations (including 1,1-DCE and PCE) detected during the ISCO + 1 Month ISCO groundwater sampling event conducted on 17 October 2017 (Table I).

4.1.1 Monitor Well PT-2S

- TCE, 1,1-DCE, PCE and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 585, 104, 0.53 (J) and 41.0 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. Detected concentrations of PCE was below its USEPA MCL of 5 µg/L. There is currently no MCL for 1,4-Dioxane.

4.1.2 Monitor Well PT-3

- TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 169, 20.8, and 11.0 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. There is currently no MCL for 1,4-Dioxane.

4.2 ISCO + 2 MONTH

The following presents the COC concentrations (including 1,1-DCE and PCE) detected during the ISCO + 2 Months ISCO groundwater sampling event conducted on 15 November 2017 (Table I).

4.2.1 Monitor Well PT-2S

- TCE, 1,1-DCE, PCE and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 538, 90.8, 0.37 (J) and 42.3 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. Detected concentrations of PCE was below its USEPA MCL of 5 µg/L. There is currently no MCL for 1,4-Dioxane.

4.2.2 Monitor Well PT-3

- TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 168, 22.1, and 10.6 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. There is currently no MCL for 1,4-Dioxane.

4.3 ISCO + 3 MONTH

The following presents the COC concentrations (including 1,1-DCE and PCE) detected during the ISCO + 3 Months ISCO groundwater sampling event conducted on 19 December 2017 (Table I).

4.3.1 Monitor Well PT-2S

- TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 608, 96.4, and 37.5 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. There is currently no MCL for 1,4-Dioxane.

4.3.2 Monitor Well PT-3

- TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 165, 16.4, and 10.1 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. There is currently no MCL for 1,4-Dioxane.

4.3.3 Monitor Well LB-7R

- TCE and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 0.45 (J) and 1.1 µg/L, respectively. Detected concentration of TCE was below its USEPA MCL of 5 µg/L, respectively. There is currently no MCL for 1,4-Dioxane.

4.3.4 ISCO-1 SHALLOW

- TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 36.3, 0.46 and 20.9 µg/L, respectively. Detected concentration of TCE was above its USEPA MCL of 5 µg/L. Detected concentration of 1,1-DCE was below its USEPA MCL of 7 µg/L. There is currently no MCL for 1,4-Dioxane.

4.3.5 ISCO-1 DEEP

- TCE and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 11.0 and 8.5 µg/L, respectively. Detected concentration of TCE was above its USEPA MCL of 5 µg/L. There is currently no MCL for 1,4-Dioxane.

4.4 ISCO + 6 MONTH

The following presents the COC concentrations (including 1,1-DCE and PCE) detected during the ISCO + 6 Months groundwater sampling event conducted on 15 March 2018 (Table I).

4.4.1 Monitor Well PT-2S

- TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 645, 104, and 42.2 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. There is currently no MCL for 1,4-Dioxane.

4.4.2 Monitor Well PT-3

- TCE, 1,1-DCE, and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 172, 20.6, and 6.6 µg/L, respectively. Detected concentrations of TCE and 1,1-DCE were above their USEPA MCLs of 5 and 7 µg/L, respectively. There is currently no MCL for 1,4-Dioxane.

4.4.3 Monitor Well LB-7R

- TCE and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 7.0 and 3.3 µg/L, respectively. Detected concentration of TCE was above its USEPA MCL of 5 µg/L. There is currently no MCL for 1,4-Dioxane.

4.4.4 ISCO-1 SHALLOW

- TCE and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 164 and 22.4 µg/L, respectively. Detected concentration of TCE was above its USEPA MCL of 5 µg/L. There is currently no MCL for 1,4-Dioxane.

4.4.5 ISCO-1 DEEP

- TCE and 1,4-Dioxane were detected above the laboratory MDLs at concentrations of 17.9 and 5.7 µg/L, respectively. Detected concentration of TCE was above its USEPA MCL of 5 µg/L. There is currently no MCL for 1,4-Dioxane.

4.5 METAL AND GENERAL CHEMISTRY RESULTS

The following presents a summary of the metal and general chemistry results for the monitor/injection wells sampled during the post-ISCO sampling events (Table II).

4.5.1 Monitor Well PT-2S

- The field parameters for the ISCO + 1, + 2, + 3, and + 6 Months sampling events indicate that PT-2S may have been affected by the remedial event.

- The concentration of DO increased from approximately 5 milligrams per liter (mg/L) to 7 mg/L and remained elevated for several months before returning to approximately 6 mg/L.
- Redox became more oxidizing increasing from +54.2 mV during the ISCO + 1 Month sampling event and has remained between +142.3 mV (ISCO + 6 Months) and +170.7 mV (ISCO + 3 Months).
- The pH has remained neutral.

- The general chemistry results indicate that the groundwater in the vicinity of the monitor well was affected by the remedial event.
  - The concentration of sodium has increased during the ISCO + 6 Months sampling event from the ISCO +1 Month sampling event result of 465 mg/L to 524 mg/L.
  - The total alkalinity initially decreased and then has begun to return to normal. The decrease in alkalinity may be due to its interaction with the oxidant sodium persulfate, however, no corresponding increase in sulfate concentrations were noted. The decrease in alkalinity could also be a function of alkaline pH flowing into the vicinity of monitor well PT-2S and buffering the pH in the subsurface.
  - No ferric or ferrous iron was present above its laboratory detection limit, nor were any dissolved gases (methane, ethene, or ethane) detected above their laboratory detection limits.

4.5.2 Monitor Well PT-3

- The field parameters for the ISCO + 1, + 2, + 3, and + 6 Months sampling events indicate that groundwater in the vicinity of monitor well PT-3 may have been affected by the remedial event.
  - The concentration of DO increased from 4.9 mg/L to 6.59 mg/L and remained elevated for several months before returning to 5.71 mg/L during the ISCO + 6 Months sampling event.
  - Redox became more oxidizing increasing from +135.1 mV during the ISCO + 1 Month sampling event and was measured at +221.0 mV during the ISCO + 6 Months sampling event.
  - The pH has remained neutral.

- The general chemistry results indicate that the groundwater in the vicinity of monitor well PT-3 may have been affected by the remedial event.
  - The concentration of sodium has increased during the ISCO + 6 Months sampling event from the ISCO + 1 Month sampling event result of 476 mg/L to 502 mg/L.
  - The total alkalinity initially increased slightly from 325 mg/L to 340 mg/L, however, the bicarbonate alkalinity decreased significantly from 1,250 mg/L to 339 mg/L during the ISCO + 1 Month and + 2 Months sampling events, respectively. This decrease may be the result of buffering as bicarbonate alkalinity is more affected by changes in pH.
  - No ferrous iron was present in the monitoring point, indicating that the subsurface has remained oxidative. The concentration of ferric iron has remained low but above the laboratory detection limit in all but the ISCO + 3 Months sampling event.
  - No methane, ethene, or ethane were detected in the groundwater samples collected from monitor well PT-3.

- The concentration of sulfate has remained mostly stable during the post-ISCO sampling events; however, the ISCO + 6 Months sampling event had the greatest sulfate concentration at 380 mg/L.

4.5.3 Monitor Well LB-7R

- The field parameters for the ISCO + 3 Months and ISCO + 6 Months sampling events indicate that groundwater in the vicinity of monitor well LB-7R was strongly affected by the remedial event.
  - The concentration of DO increased from 6.72 mg/L pre-ISCO to 37.61 mg/L at the ISCO + 3 Months sampling event and remained elevated at the ISCO + 6 Months sampling event at 18.25 mg/L. The increase in DO indicates that groundwater in the vicinity of monitor well LB-7R remains oxidative and aerobic at this time.
  - Redox became more oxidizing increasing from -67.9 mV prior to the ISCO event to +92.6 mV at the ISCO + 3 Months sampling event and was measured at +98.8 mV during the ISCO + 6 Months sampling event.
  - The pH has remained alkaline following the remedial event, though the pH has begun to decrease and is currently measured at 11.04.
- The general chemistry results indicate that the groundwater in the vicinity of monitor well LB-7R was affected by the remedial event.
  - The concentration of sodium has increased significantly during the post-remedial sampling events and was measured at 2,340 mg/L and 1,350 mg/L during the ISCO +3 Months and + 6 Months sampling events, respectively.
  - No ferrous or ferric iron was measured above the laboratory detection limits for groundwater samples collected at monitor well LB-7R.
  - The concentration of sulfate is elevated in groundwater samples collected at monitor well LB-7R with concentrations of 1,690 mg/L and 1,030 mg/L during the ISCO + 3 Months and + 6 Months sampling events, respectively. As this monitor well was used as an injection point during the remedial event, these results are expected.
  - The concentration of chloride was significantly above the background concentration during the ISCO + 3 Months sampling event with a concentration of 843 mg/L before returning to baseline during the ISCO + 6 Months sampling event. These data indicate that significant oxidation of chlorinated compounds was achieved during the first 3 months following the remedial event.

4.5.4 ISCO-1 SHALLOW

- The field parameters for the ISCO + 3 Months and + 6 Months sampling events indicate that the groundwater in the vicinity of injection well ISCO-1 SHALLOW was strongly affected by the remedial event.
  - The concentration of DO increased to 30.18 mg/L at the ISCO + 3 Months sampling event and remained elevated at the ISCO + 6 Months sampling event at 16.3 mg/L. The increase in DO indicates that the groundwater in the vicinity of injection well ISCO-1 SHALLOW remains oxidative and aerobic at this time.
  - Redox became more oxidizing and was measured at +155.9 mV at the ISCO + 3 Months sampling event and was measured at +156.3 mV during the ISCO + 6 Months sampling event.

- The pH has remained alkaline following the remedial event, though the pH has begun to decrease and is currently measured at 10.26.

- The general chemistry results indicate that the groundwater in the vicinity of the injection well was affected by the remedial event.
  - The concentration of sodium has increased significantly during the post-remedial sampling events and was measured at 1,500 mg/L and 1,000 mg/L during the ISCO + 3 Months and + 6 Months sampling events, respectively.
  - Only ferric iron was present in the groundwater samples collected in the vicinity of injection well ISCO-1 SHALLOW at a concentration of 610 µg/L and 357 µg/L during the respective ISCO + 3 Months and + 6 Months sampling events. The presence of ferric iron indicates an oxidative environment as no ferrous iron was present in the subsurface. The presence of ferric iron will allow for eventual biological activity to utilize the iron as a Redox active electron transfer agent as it can receive and accept electrons during biological processes.
  - The concentration of sulfate is elevated in groundwater samples collected at injection well ISCO-1 SHALLOW with concentrations of 1,030 mg/L and 784 mg/L during the ISCO + 3 Months and + 6 Months sampling events, respectively. As this well was used as an injection point during the remedial event, these results are expected and indicates that the sulfate is potentially traveling within groundwater and is being used by bacterial processes in the subsurface.

4.5.5 ISCO-1 DEEP

- The field parameters for the ISCO + 3 Months and + 6 Months sampling events indicate that the groundwater in the vicinity of injection well ISCO-1 DEEP was strongly affected by the remedial event.
  - The concentration of DO increased to 33.77 mg/L at the ISCO + 3 Months sampling event and remained elevated at the ISCO + 6 Months sampling event at 18.38 mg/L. The increase in DO indicates that the groundwater in the vicinity of the injection well remains oxidative and aerobic at this time.
  - The Redox potential became more oxidizing and was measured at +142.8 mV at the ISCO + 3 Months sampling event and was measured at +220.1 mV during the ISCO + 6 Months sampling event.
  - The pH has remained alkaline following the remedial event, though the pH has begun to decrease and is currently measured at 11.1 during the ISCO + 6 Months sampling event, down from the ISCO + 3 Months sampling event result of 12.23.

- The general chemistry results indicate that the groundwater in the vicinity of the injection well was affected by the remedial event.
  - The concentration of sodium has increased significantly during the post-remedial sampling events and was measured at 2,260 mg/L and 1,510 mg/L during the ISCO + 3 Months and + 6 Months sampling events, respectively.
  - Only ferric iron was present in groundwater samples collected at ISCO-1 DEEP at a concentration of 893 µg/L and 1,460 µg/L during the respective ISCO + 3 Months and + 6 Months sampling events. The presence of ferric iron indicates an oxidative environment as no ferrous iron was present in the subsurface. The presence of ferric iron will allow for eventual biological activity to utilize the iron as a Redox active

electron transfer agent as it can receive and accept electrons during biological processes. ISCO-1 DEEP currently has the greatest concentration of iron.

- The concentration of sulfate is elevated in groundwater samples collected at ISCO-1 DEEP with concentrations of 2,050 mg/L and 1,430 mg/L during the ISCO + 3 Months and + 6 Months sampling events, respectively. As this injection well was used as an injection point during the remedial event, these results are expected and indicates that the sulfate is potentially traveling within groundwater and is being used by bacterial processes in the subsurface.

5. Data Verification

Data verification of the pre- and post-ISCO sampling water quality data was completed. Appendix F presents the data quality review. The analytical data packages were received from SGS and reviewed for basic analytical quality assurance/quality control adherence based on the "*EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008 (USEPA-540-R-08-01), Quality Assurance Project Plan, Former Plymouth Tube*, *prepared for the United States Environmental Protection Agency, February 2013"* (Geomatrix, 2005), as well as by the pertinent methods referenced by the data package and professional judgment. Data packages were reviewed for chain-of-custody discrepancies; adherence to sample holding times; evaluation of matrix spike/matrix spike duplicates and laboratory control samples/laboratory control sample duplicates; and assessment of equipment, field, trip, and method blanks.

Following verification of the data presented in the analytical data packages, the data as qualified are considered usable and acceptable for meeting project objectives.

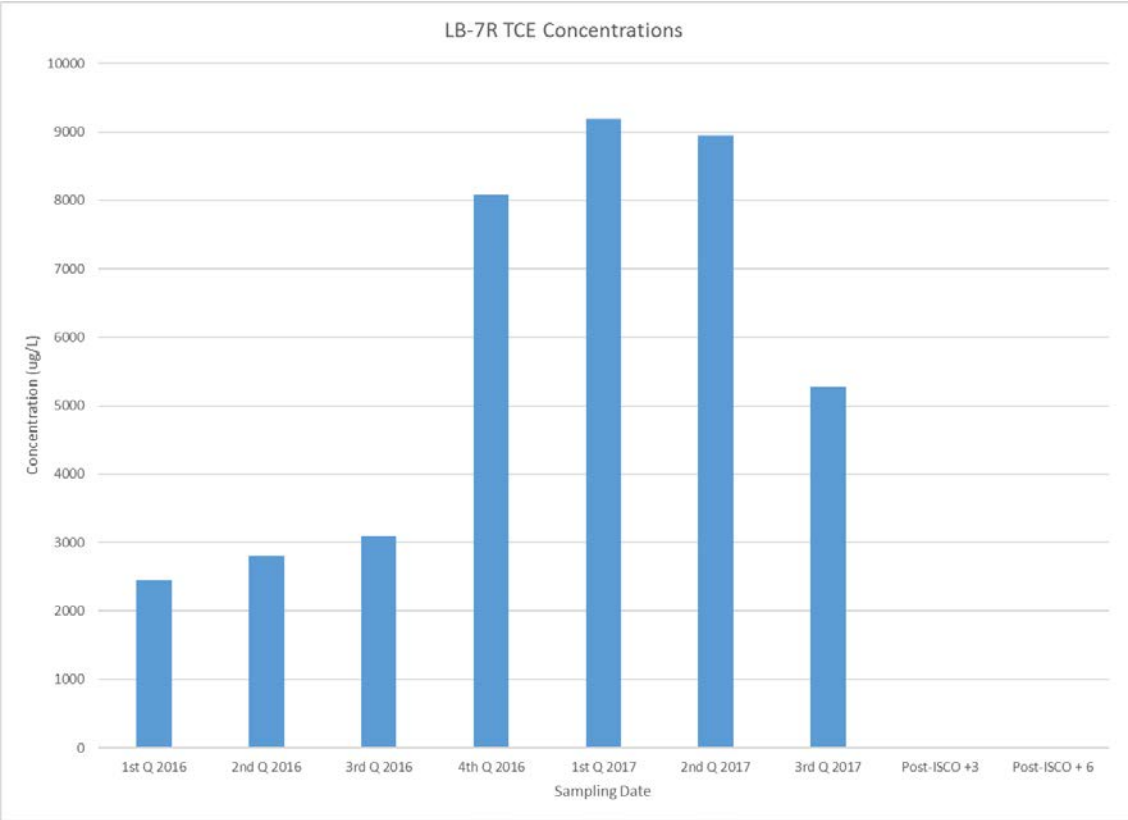
6. Evaluation of Factors of Success

The Focused ISCO remedial event is considered successful. The success of the remedial event was evaluated based on described factors of success, presented below.

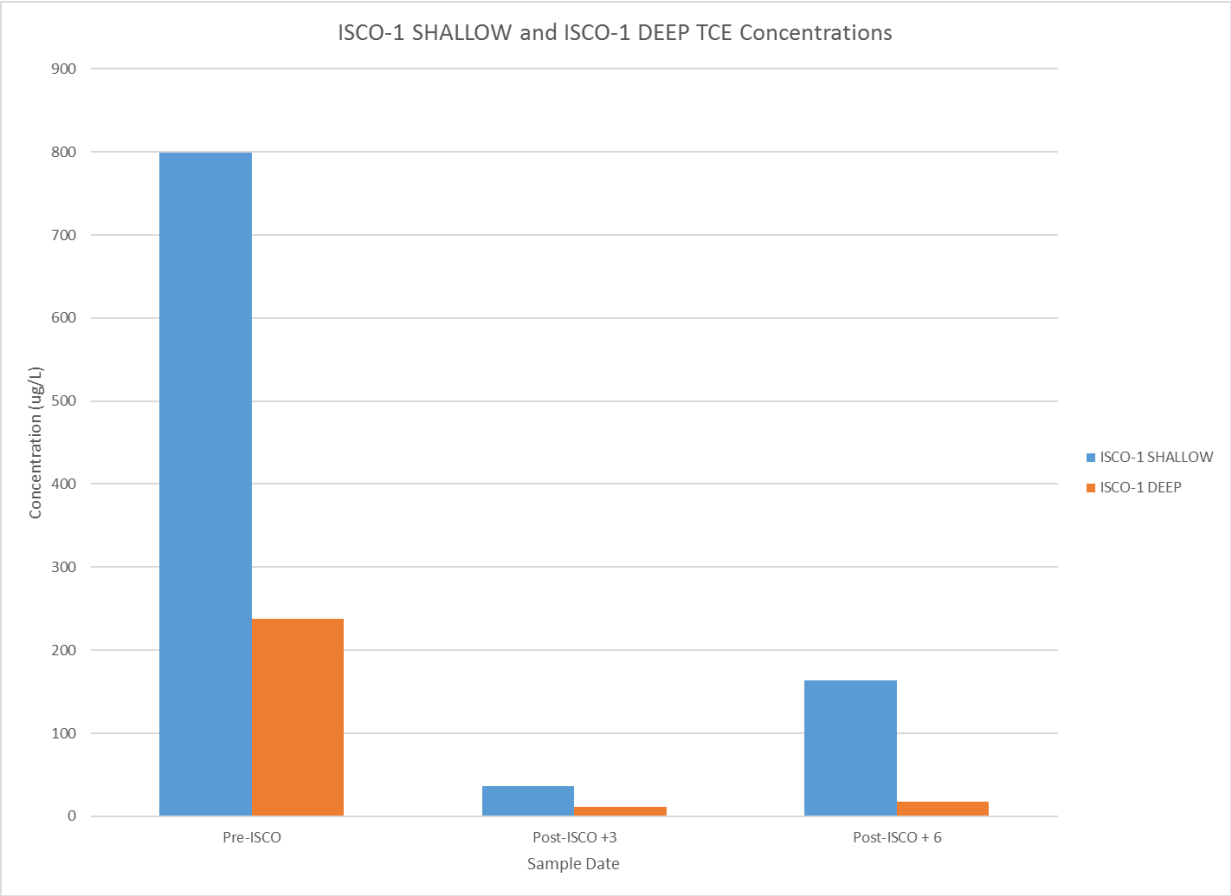
The Focused ISCO remedial event will be considered successful if downward trends of targeted compounds (VOCs, specifically TCE) are observed for at least 2 quarters following the remedial event. Initially following the remedial event, localized increases in VOC concentrations can occur from the desorption of VOCs from soil and from the homogenization/mixing of the subsurface due to the injection process. The concentrations will normalize following the remedial event when equilibrium is reached in the subsurface, allowing for trend analysis.

Initially, increases in daughter/intermediate compounds may occur that also indicate that successful oxidation and/or reductive dechlorination has been stimulated. The ISCO event will initially cause oxidation of the targeted compounds but as the ISCO reagent is depleted, the subsurface will become reducing and biodegradation will continue in the subsurface.

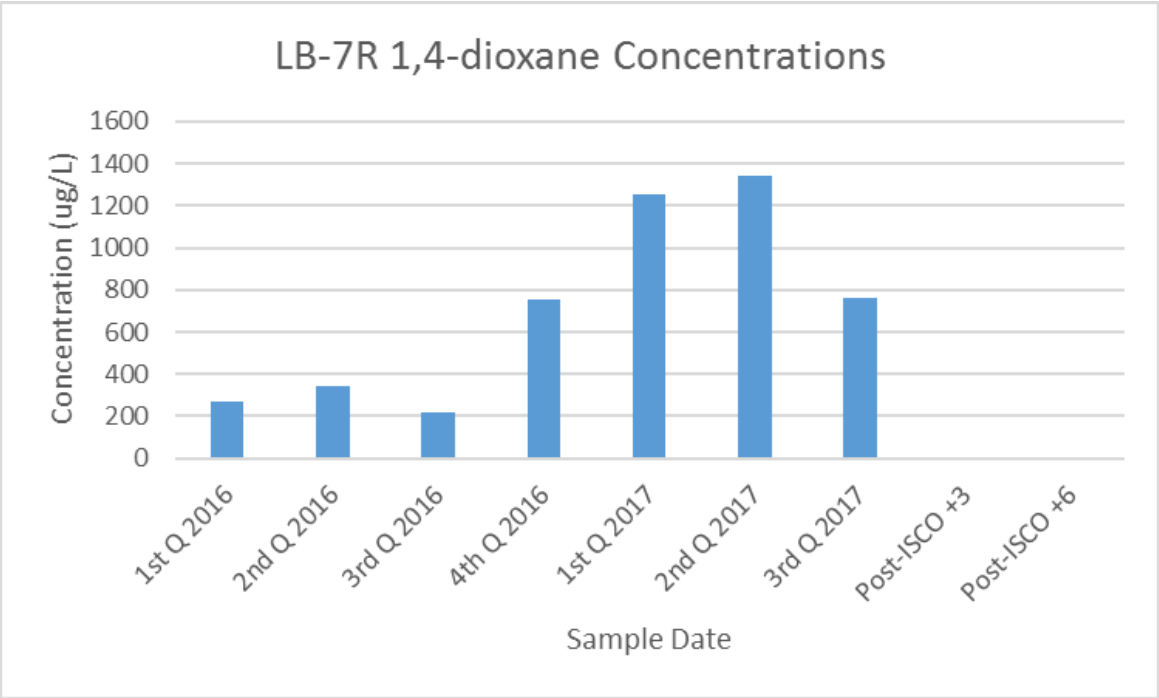
The Focused ISCO event has reduced concentrations of TCE during the 6-month post ISCO sampling event in LB-7R, ISCO-1 SHALLOW, and ISCO-1 DEEP by 99.9 percent, 79.5 percent, and 92.5 percent, respectively, when compared to their pre-ISCO concentration results. Maximum concentrations present during the 6-month sampling in the treatment area were located at ISCO-1 SHALLOW at 164 µg/L. There was a slight increase in the concentration of TCE in the three targeted wells, however, the concentration change was slight and is likely due to equilibrium and homogenization of the subsurface following the injection event. The concentrations of TCE continue to remain low in the treated areas. A graph of the concentrations of TCE pre-ISCO and post-ISCO is provided below.



Note: Detected TCE concentrations during the post-ISCO + 3 Months and + 6 Months sampling events are too low to be displayed on the bar scale above.



Other compounds, such as 1,4-Dioxane, also decreased significantly following the focused ISCO event in LB-7R, ISCO-1 SHALLOW, and ISCO-1 DEEP which saw reductions during the 6-month post-ISCO sampling event of 99.6 percent, 75.7 percent, and 81.7 percent, respectively, when compared to their pre-ISCO concentration results. A graph of the 1,4-Dioxane concentrations in LB-7R is located below.



Note: Detected 1,4-Dioxane concentrations during the post-ISCO + 3 Months and + 6 Months sampling events are too low to be displayed on the bar scale above.

Following the remedial event, the concentrations of sodium, sulfate, and chloride initially increased and have begun decreasing during the ISCO + 6 Months sampling event (Table II). The concentration of sulfate increased significantly in the treatment area during the ISCO + 3 Months sampling event and has decreased during the ISCO + 6 Months sampling event. The concentration of sulfate indicates that there are electron acceptors present in the subsurface. The elevated sulfate concentrations in the range of 784 mg/L to 1,050 mg/L in the treatment area indicates that the remedial event successfully emplaced the remedial amendments into the subsurface. The concentration of sodium is also elevated across the Site and has increased slightly in downgradient monitor wells which is indicative of the byproducts of the oxidation event traveling with groundwater and potentially influencing groundwater quality in downgradient monitor wells. The increase in sulfate concentrations may further stimulate biodegradation through the proliferation of sulfate reducing bacteria that are capable of co-metabolic degradation. Chloride concentrations remain elevated across the Site and is likely from a background source and is therefore not readily usable for efficacy evaluation.

The largest indicator of the success of the Focused ISCO remedial event is the substantial decrease in TCE and 1,4-Dioxane concentrations. The recent maximum concentration of TCE prior to the remedial event was 5,280 µg/L in groundwater samples collected from monitor well LB-7R during the October 2017 sampling event. After the remedial event, the greatest concentration of TCE was detected at 645 µg/L in the groundwater sample collected from the down gradient monitor well PT-2S during the ISCO + 6 Months sampling event. The greatest concentration of TCE present in the vicinity of the Focused ISCO remedial event was 164 µg/L in the groundwater sample collected from the injection well ISCO-1 SHALLOW during the ISCO + 6 Months sampling event. The largest decreases in VOC, TCE, and 1,4-Dioxane concentrations in the source area will allow for MNA to become a viable remedial option for closure at the Site.

The plume remains stable or is shrinking without increasing concentrations in groundwater collected from the downgradient monitor wells. The concentrations in the source area were treated successfully with the Focused ISCO event and will allow for further plume contraction. There are elevated concentrations of electron acceptors in the subsurface that will allow for biodegradation to further reduce contaminants of concern. Also, the concentration of 1,4-Dioxane has been reduced by up to three orders of magnitude following the ISCO event which is a significant reduction in concentration at the Site.

7. Conclusions and Recommendations

The following key points and technical discussions for the groundwater Final Remedy as presented in Section 2 Scope of Activities above have been successfully completed:

- A pilot study (Bench Scale Test) has been performed and it determined AP to be the oxidant most effective to address the COCs and determined the dosing concentrations to be used in the Final Remedy.
- The proposed Final Remedy for groundwater (Focused ISCO) has been performed in the vicinity of GRIC monitor well LB-7 utilizing Plymouth Tube monitor well LB-7R and the injection well (ISCO-1) located approximately 10 to 15 feet west of abandoned monitor well LB-7 has been successfully completed.
- Increased sampling frequency was conducted at monitor wells PT-2S and PT-3 after the ISCO application which documented the successful ISCO effects on the TCE plume concentrations.
- The Final Remedy "factors of success" have demonstrated the success of the ISCO implementation and monitoring and these data support moving from the ISCO application to MNA.
- No contingency plan/future action(s) other than moving to MNA are necessary.
- Quarterly Groundwater Monitoring Events is continuing until the ISCO Report has been approved and the USEPA has authorized moving the Final Remedy to the MNA program as outlined in the CMI Work Plans.
- The groundwater data does not indicate that a revision or update to the HHRA is necessary prior to implementing the MNA.

In summary, the field events that comprised the Focused ISCO event have successfully reduced VOC concentrations in the targeted areas and supports the determination of MNA for groundwater for the Site. The plume has remained stable following the remedial event and the source area has seen significant reductions in TCE and 1,4-Dioxane concentrations, which should induce plume contraction. No adverse byproducts of the ISCO event have been detected including dissolved gases such as methane or reductive dechlorination products such as vinyl chloride. Haley & Aldrich recommends that the Site be moved into the MNA monitoring program to further evaluate the attenuation that is occurring at the Site. No additional ISCO events are proposed due to the large reductions in VOC concentrations exhibited during the Focused ISCO event.

The recommendation for a path forward for the Site include quarterly sampling for 1 year followed by 4 years of semi-annual monitoring. VOCs will be analyzed and geochemical parameters that may be analyzed for include but are not limited to sulfate, total and dissolved iron, dissolved gases such as ethene and carbon dioxide, and biological population analysis through quantitative polymerase chain reaction. A final monitoring plan will be evaluated based on further MNA sampling to be conducted at the Site. The Site monitoring plan will evaluate the continued efficacy of the Focused ISCO event in contracting the plume and reducing the source area concentrations.

8. References

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3. Haley & Aldrich, Inc., 2017. *Final – Corrective Measures Implementation, Soil Vapor Extraction System Closure and Focused ISCO and MNA Work Plans, Former Plymouth Tube Company Facility, 6573 West Willis Road, Chandler, Arizona*. 26 April.

4. Haley & Aldrich, Inc., 2018. *Focused ISCO Update, Former Plymouth Tube Company Facility, 6573 West Willis Road, Chandler, Arizona*. 8 January.

5. NV5, 2015. *RCRA Facility Investigation Report, Former Plymouth Tube Company Facility, 6573 West Willis Road, Chandler, Arizona*. 29 December.

6. NV5, 2016. *Corrective Measures Study Report, Former Plymouth Tube Company Facility, 6573 West Willis Road, Chandler, Arizona*. 29 January.

7. PRIMA Environmental, 2017. Final Report of Findings "Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs," Plymouth Tube Chandler Haley & Aldrich Project Number: 128159-003 Task 9. 15 August.

8. U.S. Environmental Protection Agency (USEPA), 2016a. *Summary Memo: Plymouth Tube August 4, 2016 Final Remedy Meeting*, Prepared by Angela Sandoval, USEPA Project Manager. 23 August.

9. USEPA, 2016b. *Summary Memo: Progress Report Concerning Plymouth Tube Corrective Action Activities*, from John R. Moody, USEPA Project Manager, to: Rebecca Sugerman, Esq. and Angela Sandoval. 29 August.

10. USEPA, 2017. *Plymouth Tube, EPA ID: AZD020691507, Corrective Measures Implementation Workplan Partial Approval, Docket No. RCRA-7003-09-2008-0002*. 9 June.

TABLES

TABLE I
SUMMARY OF VOLATILE ORGANIC COMPOUND RESULTS
ISCO INJECTION AND MONITORING
PLYMOUTH TUBE GROUNDWATER MONITORING
CHANDLER, ARIZONA

Well Name	**PT-2S**	**PT-2S**	**PT-2S**	**PT-2S**	**PT-3**	**PT-3**	**PT-3**	**PT-3**	**LB-7R**	**LB-7R**	**ISCO-1 SHALLOW**	**ISCO-1 SHALLOW**	**ISCO-1 SHALLOW**	**ISCO-1 DEEP**	**ISCO-1 DEEP**	**ISCO-1 DEEP**
Sample Event	ISCO + 1 Month	ISCO + 2 Months	ISCO + 3 Months	ISCO + 6 Months	ISCO + 1 Month	ISCO + 2 Months	ISCO + 3 Months	ISCO + 6 Months	ISCO + 3 Months	ISCO + 6 Months	Pre-ISCO	ISCO + 3 Months	ISCO + 6 Months	Pre-ISCO	ISCO + 3 Months	ISCO + 6 Months
Sample Delivery Group	TD10880	TD12350	TD14014	TD12350	TD10880	TD12350	TD14014	TD12350	TD14014	TD18251	TD6115	TD14014	TD18251	TD6115	TD14014	TD18251
Sample Date	10/17/2017	11/15/2017	12/19/2017	3/15/2018	10/17/2017	11/15/2017	12/19/2017	3/15/2018	12/19/2017	3/15/2018	07/11/2017	12/19/2017	3/15/2018	07/11/2017	12/19/2017	3/15/2018
Analyte																
Volatile Organic Compounds (µg/L)																
1,1-Dichloroethene	**104**	**90.8**	**96.4**	**104**	**20.8**	**22.1**	**16.4**	**20.6**	< 1.0	<1.0	**166**	**0.46**	<1.0	**44.9**	< 1.0	< 1.0
1,4-Dioxane	**41.0**	**42.3**	**37.5**	**42.2**	**11.0**	**10.6**	**10.1**	**6.6**	**1.1**	**3.3**	**92.3**	**20.9**	**22.4**	**18.8**	**8.5**	**5.7**
Tetrachloroethene	**0.53 J**	**0.37 J**	< 4.0	<5.0	< 1.0	< 0.50	< 1.0	< 1.0	< 1.0	<1.0	**0.57**	< 1.0	<1.0	< 0.50	< 1.0	< 1.0
Trichloroethene	**585**	**538**	**608**	**645**	**169**	**168**	**165**	**172**	**0.45 J**	**7.0**	**799**	**36.3**	**164**	**238**	**11.0**	**17.9**

Notes
Volatile Organic Compounds (VOCs) analyzed by EPA Method 8260/8260C
BOLD *= concentration detected above the lab detection limit.*

Abbreviations:
< = analyte not detected above the indicated detection limit.
-- = not analyzed or not applicable
µg/L = micrograms per liter
J = concentration is estimated

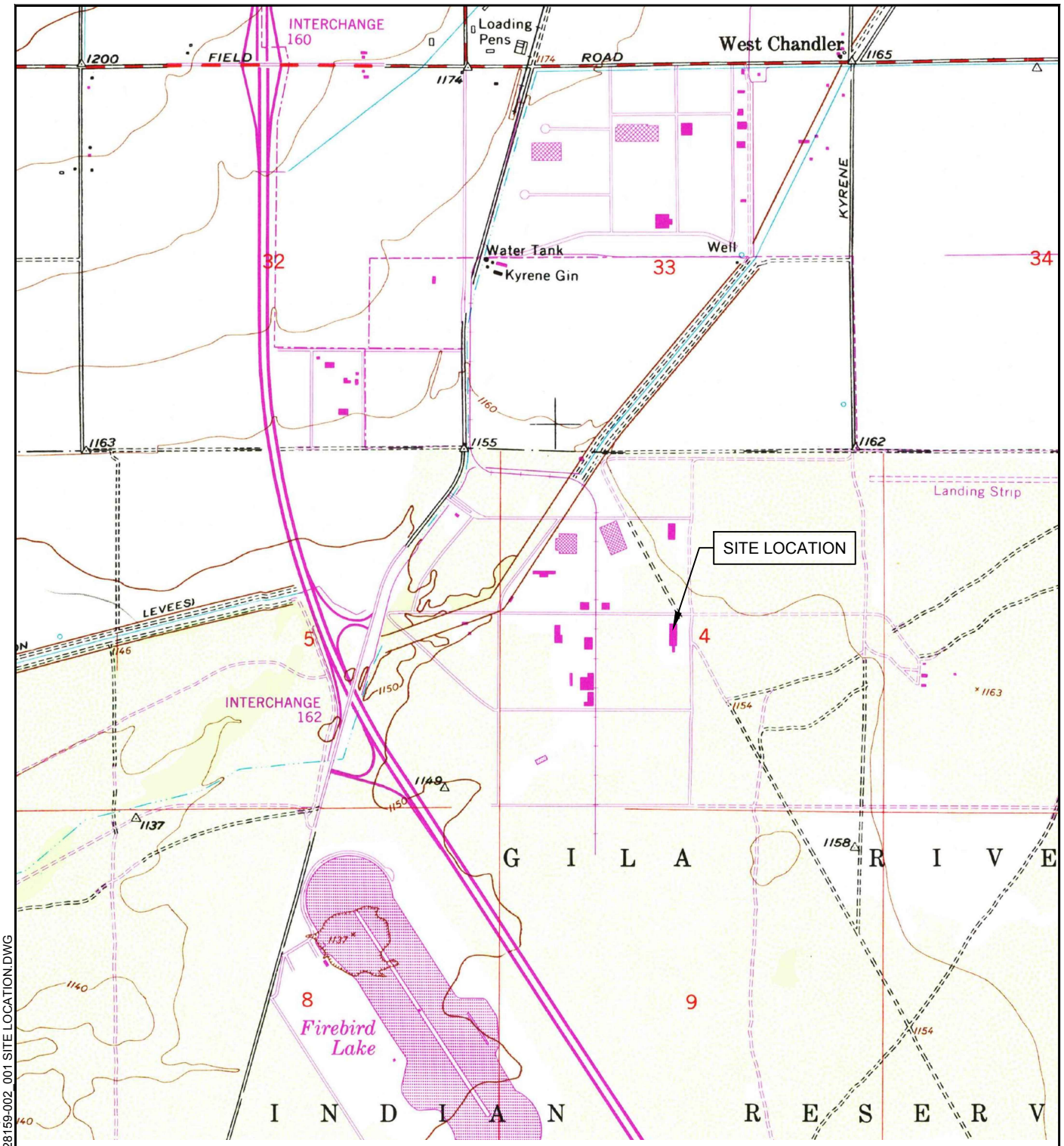
TABLE II
SUMMARY OF METAL AND GENERAL CHEMISTRY RESULTS
ISCO INJECTION AND MONITORING
PLYMOUTH TUBE GROUNDWATER MONITORING
CHANDLER, ARIZONA

Well Name	**PT-2S**	**PT-2S**	**PT-2S**	**PT-2S**	**PT-3**	**PT-3**	**PT-3**	**PT-3**	**LB-7R**	**LB-7R**	**ISCO-1 SHALLOW**	**ISCO-1 SHALLOW**	**ISCO-1 DEEP**	**ISCO-1 DEEP**
Sample Event	ISCO +1 Month	ISCO +2 Months	ISCO +3 Months	ISCO +6 Months	ISCO +1 Month	ISCO +2 Months	ISCO +3 Months	ISCO +6 Months	ISCO +3 Months	ISCO +6 Months	ISCO +3 Months	ISCO +6 Months	ISCO +3 Months	ISCO +6 Months
Sample Delivery Group	TD10880	TD12337	TD14014	TD18251-2	TD10880	TD12337	TD14014	TD18251-1	TD14014	TD18251-3	TD14014	TD1825	TD14014	TD14014
Sample Date	10/17/2017	11/15/2017	12/19/2017	3/15/2018	10/17/2017	11/15/2017	12/19/2017	3/15/2018	12/19/2017	3/15/2018	12/19/2017	3/15/2018	12/19/2017	3/15/2018
Analyte														
Field Parameters														
Temperature (Celsius)	26.66	25.4	23.81	24.54	26.03	24.65	23.11	23.82	24.23	25.81	24.4	24.99	24.72	24.31
pH (S.U.)	7.57	7.02	7.13	7.16	7.16	6.98	7.1	7.22	11.84	11.04	11.9	10.26	12.23	11.1
Specific Electrical Conductance (us/cm)	3650	3490	3206	3418	3439	3317	3045	3212	9988	6999	6371	5111	9818	7038
Dissolved Oxygen (mg/L)	5.16	7.06	7.03	5.99	4.9	6.59	6.51	5.71	37.61	18.25	30.18	16.3	33.77	18.38
Redox Potential (mV)	54.2	170.3	170.7	142.3	135.1	203.9	182.4	221	92.6	98.8	155.9	156.3	142.8	220.1
Metals (µg/L)														
Iron	< 100	< 100	< 100	<100	**155**	**183**	< 100	127	< 100	<100	**610**	**357**	**893**	**1,460**
Sodium	**465000**	**454,000**	**461,000**	**524,000**	**476000**	**431,000**	**448,000**	**502,000**	**2,340,000**	**1,350,000**	**1,500,000**	**1,000,000**	**2,260,000**	**1,510,000**
General Chemistry														
Alkalinity, Bicarbonate (Calculated) (mg/L)	**1,110**	**64.9**	345	260	**1,250**	**339**	347	285	<4.00	16	<4.00	173	<4.00	55
Alkalinity, Carbonate (mg/L)	< 5.0	< 5.0	<4.0	<5.0	< 5.0	< 5.0	<4.00	<5.0	151	299	313	196	341	460
Alkalinity, Total (as CaCO3) (mg/L)	**310**	**65.0**	--	260	**325**	**340**	--	285	--	415	--	375	--	560
Chloride (mg/L)	**712**	**597**	**693**	**723**	**656**	**538**	**631**	**621**	**843**	**683**	**628**	**666**	**617**	**670**
Ethane (µg/L)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethene (µg/L)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ferrous Iron (mg/L)	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Methane (µg/L)	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulfate (mg/L)	**390**	**349**	**379**	**394**	**367**	**313**	**355**	**380**	**1,690**	**1050**	**1,030**	**784**	**2,050**	**1,430**

Notes
Metals analyzed by USEPA Method 6010C
Alkalinity analyzed byUSEPA Method 4500/2320B
Anions analyzed by USEPA Method 300.0
Dissolved Gases analyzed by USEPA Method RSK175
Ferrous Iron analyzed by 3500D
BOLD *= concentration detected above the lab detection limit.*
Italics = concentrations calculated using the detection limit for analytes not detected above the lab detection limit

Abbreviations:
< = analyte not detected above the indicated detection limit.
-- = not analyzed or not applicable
µg/L = micrograms per liter
ISCO = In-Situ Chemical Oxidation
mg/L = milligrams per liter
mV = millivolt
S.U. = standard units
USEPA = U.S. Environmental Protection Agency

FIGURES



NOTES:

1. MAP SOURCE: USGS QUADRANGLE GUADALUPE, AZ DATED 1952, REVISED 1982.

0 1000 2000
APPROXIMATE SCALE IN FEET

HALEY ALDRICH

FORMER PLYMOUTH TUBE COMPANY
6573 WEST WILLIS ROAD
CHANDLER, ARIZONA

SITE LOCATION MAP

SCALE: AS SHOWN
MAY 2018

FIGURE 1

JAKUBOWSKI, TODD Printed: 9/7/2016 1:48 PM Layout: FIGURE 1
\\PHX\COMMON\PROJECTS\PLYMOUTH TUBE\CAD\128159-002_001 SITE LOCATION.DWG

LEGEND

LB-7R	MONITOR WELL LOCATION
PT-3	MONITOR WELL LOCATION
SB-13	ARCADIS, 2006 SOIL BORING LOCATION
SB-1	GERAGHTY & MILLER, 1995 SOIL BORING LOCATION
VASG-4	GROUNDWATER MONITORING WELL
VASG-1	ABANDONED GROUNDWATER MONITORING WELL
AASG-2	ANGLE VAPOR MONITORING WELL
AASG-1	ABANDONED ANGLE SOIL/SOIL GAS BORING
SASG-1	SHALLOW SOIL/SOIL GAS SAMPLING LOCATION
VASG-4	VERTICAL VAPOR MONITOR WELL
	HHRA SITE BOUNDARY
	ASSUMED AREA OF TCE CONCENTRATION > 10,000 µg/L
ISCO-1	PROPOSED LOCATION OF ISCO INJECTION WELL

N

0 100 200

APPROXIMATE SCALE IN FEET

HALEY ALDRICH

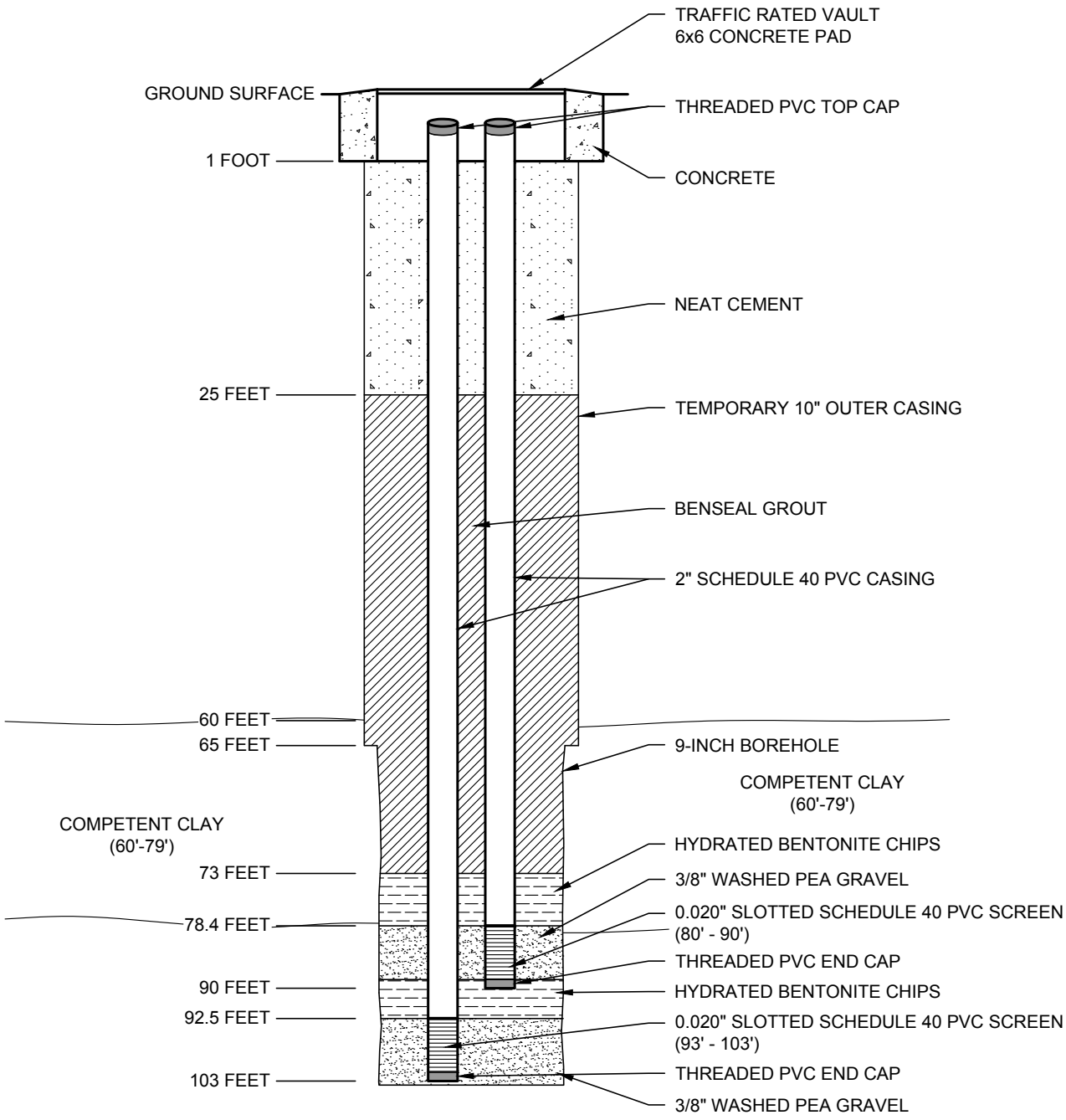
FORMER PLYMOUTH TUBE COMPANY
6573 WEST WILLIS ROAD
CHANDLER, ARIZONA

SITE AREA OF INTEREST

SCALE: AS SHOWN
MAY 2018

FIGURE 2

JAKUBOWSKI, TODD Printed: 3/20/2017 11:09 AM Layout: FIGURE 6
\\HALEYALDRICH.COM\SHARE\PHX_COMMON\PROJECTS\PLYMOUTH TUBE\128159-002_PLYMOUTH TUBE SOW\CAD\128159-002_006 SITE AREA OF INTEREST.DWG



DRILLING METHOD: SONIC

HALEY ALDRICH

FORMER PLYMOUTH TUBE COMPANY
6573 WEST WILLS ROAD
CHANDLER, ARIZONA

AS-BUILT WELL DIAGRAM
INJECTION WELL ISCO-1

SCALE: NONE
MAY 2018

FIGURE 3

JAKUBOWSKI, TODD Printed: 7/12/2017 12:50 PM Layout: ISCO-1
G:\PROJECTS\PLYMOUTH TUBE\128159-002_PLYMOUTH TUBE SOW\CAD\128159-002_009 WELL DIAGRAM.DWG

APPENDIX A

PRIMA's Bench-Scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs

PRIMA ENVIRONMENTAL INC.

August 15, 2017

Bruce Travers
Haley & Aldrich, Inc.
One Arizona Center
400 East Van Buren Street, Suite 545
Phoenix, Arizona 85004

RE: Final Report of Findings "Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs", Plymouth Tube Chandler H&A Project Number: 128159-003 Task 9

Dear Mr. Travers:

Enclosed is the final report of findings entitled "Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs" that describes bench testing conducted on soil and groundwater from the Plymouth Tube Chandler site. If you have any questions, please contact me at cschreier@primaenvironmental.com or 916-939-7300. Thank you for the opportunity to be of service.

Sincerely,
PRIMA Environmental, Inc.

Cindy G. Schreier, Ph.D.
President and Chief Scientist

5070 Robert J. Mathews Parkway, Suite 300, El Dorado Hills, CA 95762
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www.primaenvironmental.com

Report of Findings

Bench-Scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs

Plymouth Tube Chandler

August 15, 2017

Submitted to

Bruce Travers
Haley & Aldrich, Inc.
One Arizona Center
400 East Van Buren Street, Suite 545
Phoenix, Arizona 85004

Submitted by

PRIMA ENVIRONMENTAL INC.

5070 Robert J Mathews Parkway, Suite 300
El Dorado Hills, CA 95762

Cindy G. Schreier, Ph.D., President — Aug 15, 2017 **Date**

EXECUTIVE SUMMARY

Bench-scale treatability testing was conducted on soil (PT-6D) and groundwater (LB-7R)) from the Plymouth Tube site located in Chandler, Arizona to evaluate the suitability of activated persulfate and potassium permanganate ($KMnO_4$) for in situ chemical oxidation (ISCO) of chemicals of concern (COCs). The primary COCs at this site are 1,4-dioxane and trichloroethene (TCE). Two forms of activated persulfate were evaluated: alkaline activated persulfate (AP-pH) and iron activated persulfate (AP-Fe). Testing measured soil oxidant demand (SOD) for each oxidant, assessed the ability of each oxidant to remove COCs, and assessed the ability of soil to mitigate changes in pH associated with the use of activated persulfate.

Laboratory testing demonstrated that AP-pH, AP-Fe, and $KMnO_4$ can all destroy 1,4-dioxane and TCE, but the efficacy varied with oxidant and/or oxidant concentration. Low dose (1 g/L SP) AP-pH and AP-Fe tests destroyed 56-70% of 1,4-dioxane within 28 days and 17-60% TCE. In contrast, high dose tests (10 g/L SP), destroyed over 99% of 1,4-dioxane and TCE within 7 days. For $KMnO_4$, TCE was not detected in any sample, while 18% of 1,4-dioxane was destroyed within 28 days in the low dose (0.25 g/L $KMnO_4$) test and 43% was destroyed in the high dose test (1 g/L $KMnO_4$). In all tests, oxidant was still present at 28 days, indicating that additional COC removal would likely occur given a longer contact time.

Several non-target VOCs, including trihalomethanes and 1,1,2-trichloroethane, were detected in the high dose AP-Fe and both of the $KMnO_4$ tests, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 μg/L and were most likely present in untreated groundwater, but masked by high concentrations of non-target VOCs. Concentrations of some compounds were notably higher (up to 820 μg/L) in the AP-Fe tests. Such compounds are reactive intermediates and are expected to be destroyed given longer reaction times.

Treatment with AP-pH increased the pH to above 11, but the pH should return to near-pretreatment conditions once SP is consumed. Treatment with the high dose AP-Fe decreased pH to 2.2. Treatment with $KMnO_4$ did not affect pH.

Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil buffered between 1 and 10 mmol H^+/kg soil, implying that it can neutralize the acid generated by

decomposition of less than 1.2 g SP/kg soil. Soil also buffered between 10 and 100 mmol OH-/kg soil, indicating that more than 10 mmol OH-/kg soil (1.3 mL of 25% NaOH/kg soil) must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Based on the results of this study, PRIMA recommends that AP-pH or $KMnO_4$ be considered for use at this site. Both reacted with all COCs, though treatment of 1,4-dioxane will likely be faster using AP-pH. PRIMA suggests not using AP-Fe because this oxidant could potentially significantly reduce groundwater pH.

TABLE of CONTENTS

EXECUTIVE SUMMARY ..... **i**
List of Figures ..... **v**
List of Tables ..... **vi**
ACRONYMS and ABBREVIATIONS ..... **vii**
CHEMICAL FORMULAE ..... **viii**
1.0 INTRODUCTION **1**
1.1 Background 1
1.2 Study Objectives 2
2.0 MATERIALS and METHODS **4**
2.1 Materials 4
2.2 Preparation and Characterization of Soil and Groundwater 4
2.2.1 Soil 4
2.2.2 Groundwater 5
2.3 Initial NaOH Requirement 5
2.4 Soil Oxidant Demand / Persistence 5
2.4.1 $KMnO_4$ 5
2.4.2 Activated Persulfate 6
2.5 COC Oxidation / Secondary Effects 6
2.6 Long-Term Soil Buffering 6
2.7 Analytical Methods 8
2.8 Calculations 8
2.8.1 Theoretical Oxidant Demand due to COCs 8
2.8.2 SOD 9
2.8.3 Percent Removed/Destroyed 9
3.0 RESULTS and DISCUSSION **11**
3.1 Untreated Soil and Groundwater 11
3.2 SOD/Persistence 11
3.2.1 Alkaline Activated Persulfate SOD 11
3.2.2 $KMnO_4$ SOD 15
3.3 COC Removal 15
3.4 Secondary Parameters 19
3.5 Long-Term Soil Buffering 19
4.0 SUMMARY and CONCLUSIONS **24**

APPENDIX A (Chain of Custody)

APPENDIX B (Analytical Reports)

LIST of FIGURES

Figure 1. COC Removal Test – Day 28 7
Figure 2. AP-pH SOD. 13
Figure 3. AP-Fe SOD 14
Figure 4. $KMnO_4$ SOD. 16
Figure 5. Buffering Curves – Acid Range 22
Figure 6. Buffering Curves – Base Range 23

LIST of TABLES

Table 1. Theoretical Stoichiometric Dose Requirements 2
Table 2. Initial Conditions for COC Removal Tests 7
Table 3. Analytical Methods 8
Table 4. COCs and Secondary Parameters in Untreated Soil and Water. 12
Table 5. Theoretical Oxidant Demand due to COCs in Soil and Water 12
Table 6. Initial NaOH Requirement. 12
Table 7. COC Removal Results – COC Concentrations. 17
Table 8. COC Removal Results – Mass Balance. 18
Table 9. COC Removal - Secondary Parameters. 21

ACRONYMS and ABBREVIATIONS

AP-Fe	iron activated persulfate
AP-pH	alkaline activated persulfate
COCs	chemicals of concern
g	grams
kg	kilograms
L	liters
mg	milligrams
mL	milliliters
mmol	millimoles
mV	millivolts
µg	micrograms
ORP	oxidation reduction potential
SOD	soil oxidant demand
SP	sodium persulfate
TCE	trichloroethene
TOC	total organic carbon
VOCs	volatile organic compounds

CHEMICAL FORMULAE

C_2HCl_3	trichloroethene
$C_4H_8O_2$	1,4-dioxane
CO_2	carbon dioxide
H^+	acid/proton
H_2O	water
$KMnO_4$	potassium permanganate
MnO_2	manganese dioxide
Na^+	sodium ion
NaOH	sodium hydroxide
$Na_2S_2O_8$	sodium persulfate
OH^-	hydroxide ion
SO_4^{2-}	sulfate

1.0 INTRODUCTION

Bench-scale treatability testing was conducted on soil (PT-6D) and groundwater (LB-7R) from the Plymouth Tube site located in Chandler, Arizona to evaluate the suitability of activated persulfate and potassium permanganate ($KMnO_4$) for in situ chemical oxidation (ISCO) of chemicals of concern (COCs). The primary COCs at this site are 1,4-dioxane and trichloroethene (TCE). Two forms of activated persulfate were evaluated: alkaline activated persulfate (AP-pH) and iron activated persulfate (AP-Fe).

1.1 Background

Sodium Persulfate. Sodium persulfate (SP) is an established technology for the oxidation of a wide range of organic compounds, including site COCs. SP is commonly activated by high pH, ferrous iron, chelated iron or hydrogen peroxide (HP) in order to generate the persulfate radical. **Equations 1** and **2** show theoretical reactions for conversion of primary COCs to carbon dioxide (CO_2) and water (H_2O) by sodium persulfate ($Na_2S_2O_8$). The stoichiometric persulfate requirements based on these reactions are given in **Table 1**. SP requirements are expected to be similar for activated persulfate. In practice, a greater-than-stoichiometric dose of SP will usually be required because SP is a non-selective oxidant that will react with natural organic matter and other non-target compounds and because SP may naturally decompose.

$$3Na_2S_2O_8 + \underset{TCE}{C_2HCl_3} + 4H_2O \rightarrow 2CO_2 + 6SO_4^{2-} + 6Na^+ + 9H^+ + 3Cl^- \qquad \text{Eqn. 1}$$

$$10Na_2S_2O_8 + \underset{1,4\text{-}dioxane}{C_4H_8O_2} + 6H_2O \rightarrow 4CO_2 + 20SO_4^{2-} + 20Na^+ + 20H^+ \qquad \text{Eqn. 2}$$

Persulfate decomposes to generate sulfuric acid. The change in sulfate concentration and the effect on pH will depend upon the amount of persulfate used, the rate at which it decomposes, the presence of cations that can precipitate sulfate, and the buffering ability of site soil and groundwater. Other potential secondary effects include oxidation of soil-bound chromium to Cr(VI) and mobilization of metals due to changes in pH. The magnitude, duration, and significance of any such affects are site specific.

Table 1. Theoretical Stoichiometric Dose Requirements.

COC	g SP/g COC	g $KMnO_4$/g COC
Trichloroethene	5.4	2.4
1,4-Dioxane	27	12.5*

* Reactivity uncertain.

Potassium Permanganate. Injection of $KMnO_4$ is an established technology for the *in situ* oxidation of chlorinated ethenes. It may also react slowly with 1, 4-dioxane. The theoretical chemical reactions for the oxidation of TCE and 1,4-dioxane by $KMnO_4$ are given in **Equations 3** and **4**. The stoichiometric dose requirements are shown in **Table 1**. In practice, a greater-than-stoichiometric dose of $KMnO_4$ may be required because $KMnO_4$ is a non-selective oxidant that can react with natural organic matter and other non-target compounds in soil and water.

$$2KMnO_4 + \underset{TCE}{C_2HCl_3} + \rightarrow 2CO_2 + 2MnO_2 + H^+ + 2K^+ + 3Cl^- \qquad \text{Eqn. 3}$$

$$20KMnO_4 + \underset{1,4\text{-}dioxane}{3C_4H_8O_2} + 20H^+ \overset{?}{\rightarrow} 12CO_2 + 20MnO_2 + 22H_2O + 20K^+ \qquad \text{Eqn. 4}$$

Treatment of soil and groundwater with $KMnO_4$ may affect secondary water quality. The most common effect is an increase in the aqueous concentration of Cr(VI). Cr(VI) is a natural impurity in permanganate; in addition, both $KMnO_4$ and its by-product, manganese dioxide (MnO_2), are known to oxidize soil chromium to water soluble Cr(VI). The amount of Cr(VI) formed, if any, and its ability to attenuate, are site-specific.

1.2 Study Objectives

Batch tests were conducted to evaluate AP-pH, AP-Fe and $KMnO_4$. Specific goals were to:

- measure the initial base requirement of soil and groundwater.
- measure the soil oxidant demand/persistence for each oxidant.
- assess COC destruction by each oxidant.

- estimate the minimum aqueous SP or $KMnO_4$ concentration needed to achieve COC destruction.
- evaluate the effect of each treatment on secondary water quality parameters such as pH.
- assess the ability of soil to buffer changes in pH associated with the use of activated persulfate.

The specific tests conducted to achieve these goals are described in **Section 2.0** of this report. Results and Summary/Conclusions are presented in **Sections 3.0 and 4.0**, respectively.

2.0 MATERIALS and METHODS

2.1 Materials

Iron EDTA, Fe EDTA. Dissolve® brand iron ethylenediaminetetraacetic acid (Fe-EDTA) was obtained from Peroxychem (www.peroxychem.com). Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Potassium Permanganate, $KMnO_4$. RemOx brand $KMnO_4$ was obtained from Carus (www.caruscorporation.com)**.** Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Sodium Hydroxide, NaOH. Reagent grade NaOH was used in this study. Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Sodium Persulfate, SP. Klozur® brand SP was obtained from Peroxychem (www.peroxychem.com). Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

2.2 Preparation and Characterization of Soil and Groundwater

2.2.1 Soil

One soil sample (PT-6D) consisting of 2 five gallon buckets was received on May 25, 2017 (see **Appendix A** for chain of custody). Bulk soil was a mixture of sand with some silt and many rocks ranging in size from pea gravel to about 5 inches in diameter. Soil from one bucket was used in this study. Prior to testing, it was homogenized by passing it through a No. 4 sieve to remove particles greater than 3/16 inches then mixing by hand until it was visually homogeneous. The mass passing the 4 mesh sieve was 14.8 kg, while the mass retained was 17.4 kg. Soil passing the 4 mesh sieve (hereafter referred to as “soil”) was analyzed for:

- COCs
    - 1,4-dioxane

    - Volatile Organic Compounds (VOCs)
- Total manganese
- Total Organic Carbon (TOC)

2.2.2 Groundwater

One groundwater sample (LB-7R), consisting of twenty 1 L amber bottles, was received on May 25, 2017 (see **Appendix A** for chain of custody). The water was stored in a refrigerator (4° Celsius) until needed. Prior to testing, water was homogenized by pumping chilled water from each bottle into a large Tedlar bag, mixing, then pumping the water back into the amber bottles. Homogenized groundwater was clear and colorless. It was analyzed for:

- COCs
    - 1,4-dioxane
    - VOCs
- Alkalinity
- Dissolved manganese
- Oxidation Reduction Potential (ORP)
- pH
- Sulfate

2.3 Initial NaOH Requirement

The amount of NaOH needed to overcome the initial buffering capacity of soil and of groundwater was measured. Dilute NaOH was added to soil or groundwater and until the pH reached 11. Additional NaOH was added as needed until the pH remained near 11 for 60 consecutive minutes. This information was used to set the amount of NaOH for AP-pH tests.

2.4 Soil Oxidant Demand / Persistence

2.4.1 $KMnO_4$

The $KMnO_4$ SOD was measured over time. Three series of five vials each containing 20 grams homogenized soil and 20 mL $KMnO_4$ solution ($KMnO_4$ dissolved in deionized water) were prepared. Each series contained a different dose of $KMnO_4$: 250 milligrams per liter (mg/L) (250 milligrams per kilogram [mg/kg]), 990 mg/L (990 mg/kg), and 2,500 mg/L (2,500 mg/kg). The vials were placed on a shaker table. Periodically, at approximately 6 hours, 1 day, 2 days, 8 days, and 15 days, one vial from each series was destructively sampled and the aqueous phase analyzed for residual permanganate. SOD was calculated as described in **Section 2.8.2.**

2.4.2 Activated Persulfate

SOD/oxidant persistence was measured for AP-pH and AP-Fe. For each oxidant, two series of reactors (low dose and high dose) comprised of four replicates were prepared. Each reactor contained 60 g soil, 60 mL of activated persulfate solution, such that the initial SP concentration was approximately 5 grams per liter (g/L) in the low dose tests and 15 g/L in the high dose tests. For AP-pH, the amount of NaOH was a 2:1 mole ratio of NaOH:SP, plus the initial NaOH requirement measured in **Section 2.3**. Reactors were shaken continuously. One replicate from each series was destructively sampled at 2, 4, 8 and 21 days, and analyzed for residual SP. SOD was calculated as described in **Section 2.8.2**.

2.5 COC Oxidation / Secondary Effects

Batch tests were conducted to evaluate COC removal and assess the effect of treatment on selected secondary parameters. Fifteen (15) reactors were prepared by combining 317 g soil, 900 milliliter (mL) groundwater, and 50 mL total of SP stock solution, $KMnO_4$ stock solution, and deionized (DI) water as appropriate to give the initial conditions shown in **Table 2** with a soil to liquid ratio of 1:3. Reactors were stored at room temperature (20°C) in the dark. At the times specified in **Table 2**, the reactors were destructively sampled and the water phases were analyzed for VOCs, 1,4-dioxane, chloride, dissolved metals (iron, manganese), ORP, pH and residual oxidant (if appropriate). Soil was not analyzed for COCs because neither 1,4-dioxane nor VOCs would be expected to sorb strongly to soil under the conditions of the test. **Figure 1** shows the reactors immediately prior to sampling at Day 28.

2.6 Long-Term Soil Buffering

Soil buffering curves were generated to estimate the amount of acid (generated by decomposition of SP) and the amount of base (needed for AP-pH activation) that can be neutralized by soil over the long-term. Soil and dilute sulfuric acid or dilute NaOH were combined in a 1:1 soil to liquid ratio. The pH was measured periodically for 14 days.

Table 2. Initial Conditions for COC Removal Tests

Test	# Reps	Initial SP	Initial $KMnO_4$	Activator	Sample Time
		g/L	g/L		days
Time 0	1	0	0	n/a	0
Control	2	0	0	n/a	7, 28
AP-pH Low	2	1	0	pH > 11	
AP-pH High	2	10	0		
AP-Fe Low	2	1	0	150 mg/L Fe	
AP-Fe High	2	10	0		
KMnO4 Low	2	0	0.25	n/a	
KMnO4 High	2	0	1	n/a	

n/a = not applicable

Figure 1. COC Removal Test – Day 28 *From left*: Control, AP-pH Low, AP-pH High, AP-Fe Low, AP-Fe High, $KMnO_4$ Low, $KMnO_4$ High.

2.7 Analytical Methods

The methods for each analysis and the laboratory that performed the analyses are summarized in **Table 3**.

Table 3. Analytical Methods.

Analyte	Method	Lab performing test*
1,4-Dioxane	EPA 8260-SIM	McCampbell
VOCs	EPA 8260	Alpha Analytical
Alkalinity	SM2320B	Alpha Analytical
Chloride	EPA 300	Alpha Analytical
Metals (total or dissolved)	EPA 6020	Alpha Analytical
ORP	Probe	PRIMA
pH	Probe	PRIMA
Residual permanganate	Visible spectroscopy	PRIMA
Residual persulfate	FAS/KMnO4 titration	PRIMA
Sulfate	Hach**	PRIMA
TOC	EPA 9060	McCampbell

* Alpha Analytical (Sparks, NV); McCampbell Analytical (Pittsburg, CA)
** Hach DR2800 spectrophotometer and appropriate Hach test reagents.

2.8 Calculations

2.8.1 Theoretical Oxidant Demand due to COCs

The theoretical amount of oxidant needed to convert a COC to carbon dioxide and water is the concentration of the COC in the matrix (soil or water, see **Section 3.1**) times the stochiometric requirement **(Table 1)**. The total theoretical demand is the sum of the individual COC demands, as shown in **Equation 5**.

$$OD_{COCs} = \sum_{1}^{i} COC_i \; x \; SR_i$$

Eqn. 5

where

- OD_{COCs} is total theoretical oxidant demand due to COCs, in g/kg for soil or g/L for water
- $[COC]_i$ is concentration of *i*th COC in matrix, in g/kg for soil or g/L for water
- SR_i is the stoichiometric oxidant requirement (g oxidant / g COC) of the *i*th COC based on theoretical equations for conversion of the COC to CO_2.

2.8.2 SOD

SOD was calculated according to **Equation 6**.

$$SOD = ([Ox]_{init} - [Ox]_t) \; x \; (V/M)$$

Eqn. 6

where

- SOD is soil oxidant demand, in g (or mg) oxidant/kg soil
- $[Ox]_{init}$ is the initial concentration of oxidant, in g (or mg) oxidant/L
- $[Ox]_t$ is the concentration of oxidant at time, t, in g (or mg) oxidant/L
- V is total volume of the aqueous phase, in L
- M is mass of soil, in kg

2.8.3 Percent Removed/Destroyed

For the COC Removal tests, the percent remaining and destroyed were calculated by comparing the mass of each COC in the test reactor to the mass in the Time 0 reactor according to **Equations 7** and **8**. Concentrations in soil are assumed to be negligible.

$$\% \text{ Remaining in Aqueous} = 100 \; x \; (C_{aq}V_{aq})/(C_{aq,T0}V_{aq})$$

Eqn. 7

$$\% \text{ Destroyed} = 100 - \% \text{ Remaining in Aqueous}$$

Eqn. 8

where

- C_{aq} is the aqueous concentration (μg/L) in the control or test,
- $C_{aq,T0}$ is the aqueous concentration (μg/L) in the time 0 sample
- V_{aq} is the aqueous volume (L) of the control or test

3.0 RESULTS and DISCUSSION

3.1 Untreated Soil and Groundwater

The concentrations of COCs in soil and groundwater are shown in **Table 4**. Complete analytical reports are provided in **Appendix B**. The only detectable COCs in water were TCE (12,000 microgram per liter [μg/L]) and 1,4-dioxane (1,300 μg/L). No COCs were detected in soil. The theoretical oxidant demand of soil or water due to these COCs is given in **Table 5**. The demands are low – up to 1.2 mg oxidant/kg soil for the soils and 1.6-180 mg oxidant/L for the waters. In practice, more oxidant will likely be needed due to reactions with non-target compounds and/or decomposition of the oxidant.

Secondary parameters in soil and water are also provided in **Table 5**. Groundwater alkalinity was 360 mg/L as calcium carbonate ($CaCO_3$), ORP was 208 millivolt (mV), pH was 6.93 and sulfate was 34 mg/L. Soil did not contain measurable TOC.

The initial NaOH requirement for soil and groundwater is given in **Table 6**. The amount of NaOH needed to increase pH to 11 is 0.013 mol OH^-/kg soil (1.6 mL 25%NaOH/kg soil) for soil and 0.012 mol OH^-/L GW (1.5 mL 25%NaOH/L GW) for groundwater.

3.2 SOD/Persistence

3.2.1 Activated Persulfate SOD

Results from the AP-pH and AP-Fe SOD / persistence tests are shown in **Figures 2** and **3**, respectively. For AP-pH, the 21-day SOD was 0.6 g SP/kg soil when the initial SP concentration was 5 g/L and 2.0 g SP/kg soil when the initial SP concentration was 15 g SP/kg soil. For AP-Fe, the SOD was 1.2 g SP/kg soil when the initial SP concentration was 5 g/L and 5.0 g SP/kg soil when the initial SP concentration was 15 g SP/kg soil. Increased SOD with higher initial concentration of SP is a common phenomenon.

Table 4. COCs and Secondary Parameters in Untreated Soil and Water.

Analyte	Units	Untreated Soil	Untreated GW
COCs			
1,4-dioxane	mg/kg or µg/L	< 0.020	1,300
vinyl chloride	µg/kg or µg/L	< 20	< 80
1,1-dichloroethene	µg/kg or µg/L	< 20	690
cis-dichloroethene	µg/kg or µg/L	< 20	< 80
trichloroethene	µg/kg or µg/L	< 20	12,000
tetrachloroethene	µg/kg or µg/L	< 20	< 80
*Metals**			
Manganese	mg/L	180	0.059
Other Parameters			
Alkalinity	mg/L	n.m.	360
ORP	mV	n.m.	208
pH	mg/L	n.m.	6.93
Sulfate	mg/L	n.m.	34
TOC	mg/kg	< 610	n.m.

* Total metals in soil, dissolved metals in water

n.m. = not measured

Table 5. Theoretical Oxidant Demand due to COCs in Soil and Water.

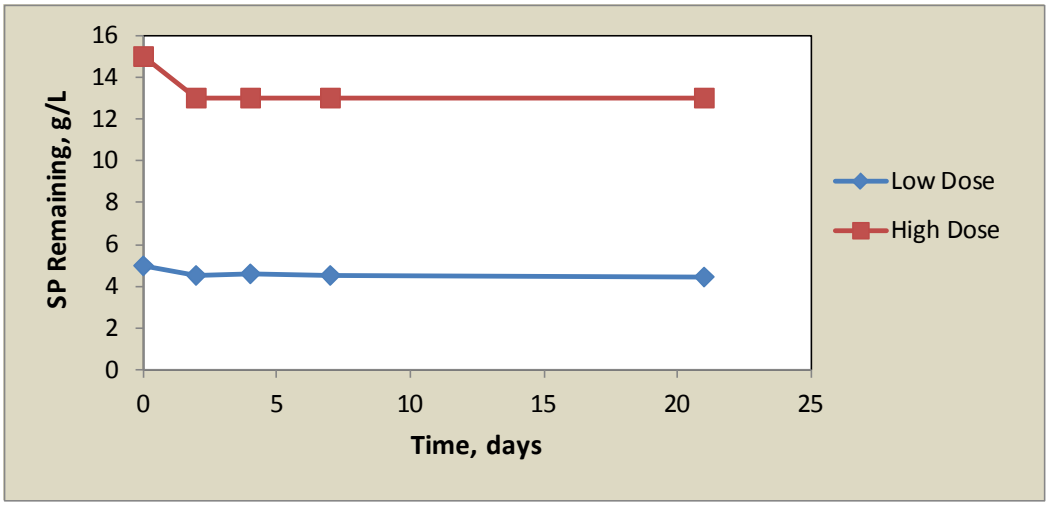
Sample	Units	Oxidant	
		SP	KMnO4
Untreated Soil	mg oxidant / kg soil	0	0
Untreated GW	mg oxidant / L GW	110	48

Table 6. Initial NaOH Requirement.

Sample	NaOH Requirement			
	moles OH^-/kg	mL 25% NaOH/kg	moles OH^-/L	mL 25% NaOH/L
Soil	0.013	1.6		
Groundwater			0.012	1.5

Time, Days	SP Remaining, g/L Soln.		SP Consumed, g/kg Soil	
	Low Dose	High Dose	Low Dose	High Dose
0	5.0	15	0	0
2	4.5	13	0.5	2.0
4	4.6	13	0.4	2.0
7	4.5	13	0.5	2.0
21	4.4	13.0	0.6	2.0

Note: SP = sodium persulfate



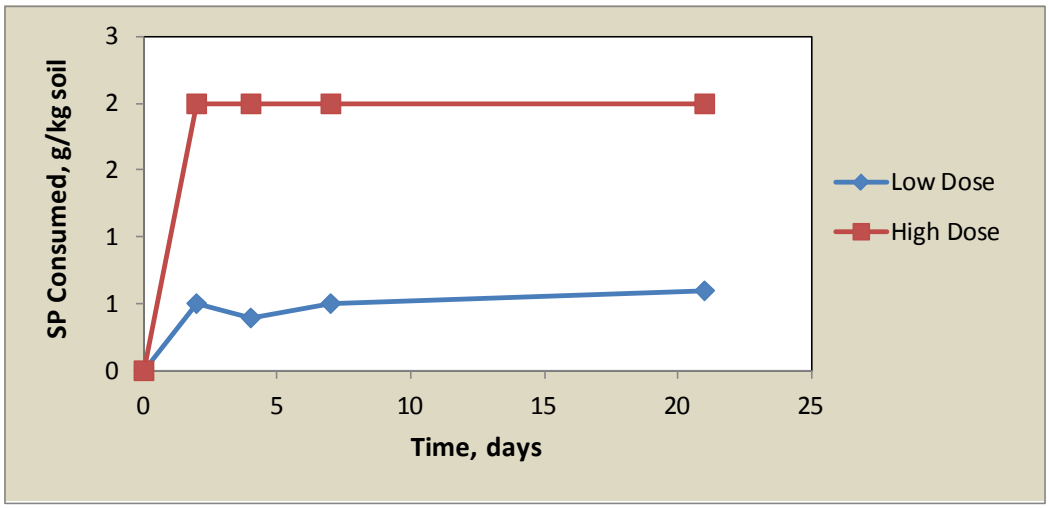
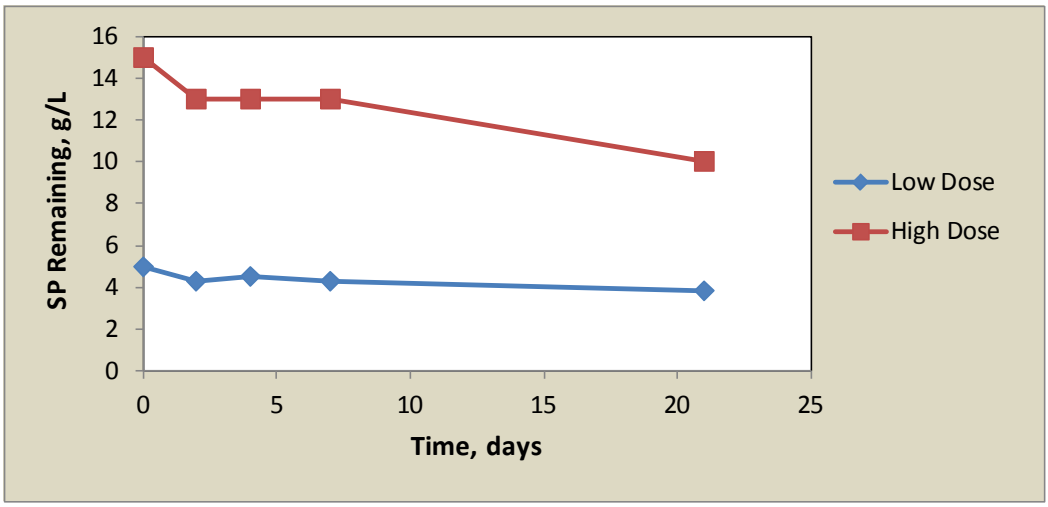


Figure 2. AP-pH SOD.

Time, Days	SP Remaining, g/L Soln.		SP Consumed, g/kg Soil	
	Low Dose	High Dose	Low Dose	High Dose
0	5.0	15	0	0
2	4.3	13	0.7	2.0
4	4.5	13	0.5	2.0
7	4.3	13	0.7	2.0
21	3.8	10.0	1.2	5.0

Note: SP = sodium persulfate



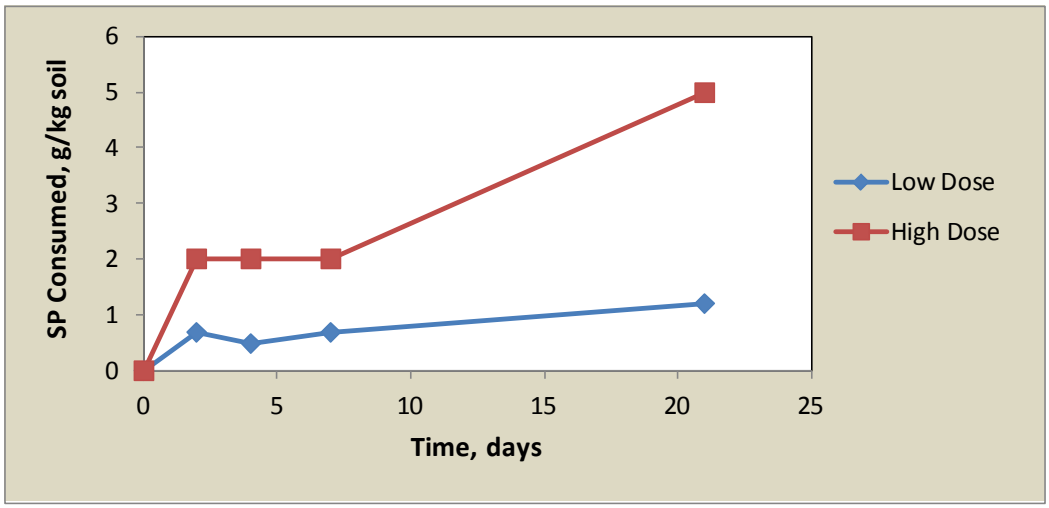


Figure 3. AP-Fe SOD.

3.2.2 $KMnO_4$ SOD

Results from the $KMnO_4$ soil oxidant demand / persistence tests are shown in **Figure 4**. The SOD was low, ranging from 45-280 mg $KMnO_4$/kg soil. In both cases, the SOD was higher when the initial concentration of $KMnO_4$ was higher, which is a common phenomenon.

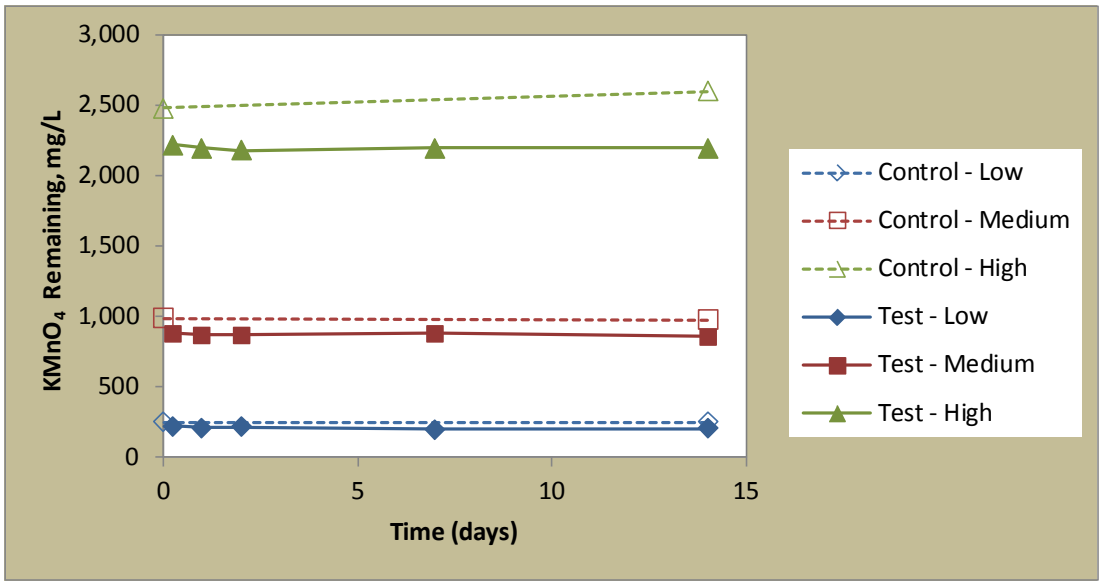
3.3 COC Removal

The concentrations of COCs from the COC Removal tests and the mass balances relative to the Time 0 are shown in **Tables 7** and **8**, respectively. Complete analytical reports are included in **Appendix B**.

All treatments decreased concentrations of all COCs in the time frame of the study, but some treatments were more effective than others. Low dose (1 g/L SP) AP-pH decreased the concentration of 1,4-dioxane from 1,000 µg/L at Time 0 to 300 µg/L by Day 28, while the high dose (10 g/L) test decreased the concentration to below the reporting limit of 0.5 µg/L within 7 days. AP-Fe behaved similarly, with the low dose (1 g SP/L) decreasing 1,4-dioxane to 440 µg/L by Day 28 and the high dose (10 g SP/L) to < 7.2 µg/L. The low dose (0.25 g/L $KMnO_4$) $KMnO_4$ test decreased the concentration to 820 µg/L, but this was the similar to the concentration seen in the control test. In contrast, the high dose (1 g/L $KMnO_4$) $KMnO_4$ test decreased 1,4-dioxane to 570 µg/L by 28 days. TCE decreased from 7,200 mg/L at Time 0 to 2,900 mg/L by Day 28 in the AP-pH low dose test and to 6,000 mg/L in the AP-Fe low dose test. It was not detected in the AP-pH high dose, the AP-Fe high dose test or any of the $KMnO_4$ tests. 1,1-DCE was detected in the Time 0 and Control samples, but not in any other sample. Oxidant was present in all reactors at Day 28, indicating that additional oxidation could occur given longer reaction times.

Several non-target VOCs were detected in the high dose AP-Fe and both of the $KMnO_4$ tests. These include 1,1-dichloroethane, 1,2-dichloroethane, chloromethane, dibromochloromethane, chloroform, bromodichloromethane, and 1,1,2-trichloroethane, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 µg/L for each analyte and were most likely present in untreated

Time (day)	$KMnO_4$ Remaining, mg/L soln.						$KMnO_4$ Consumed mg/kg soil		
	Control - Low	Control - Medium	Control - High	Test - Low	Test - Medium	Test - High	Test - Low	Test - Medium	Test - High
0	250	990	2,480						
0.25				222	880	2,220	28	110	260
1				212	870	2,200	38	120	280
2				220	870	2,180	30	120	300
7				203	880	2,200	47	110	280
14	250	980	2,600	205	860	2,200	45	130	280



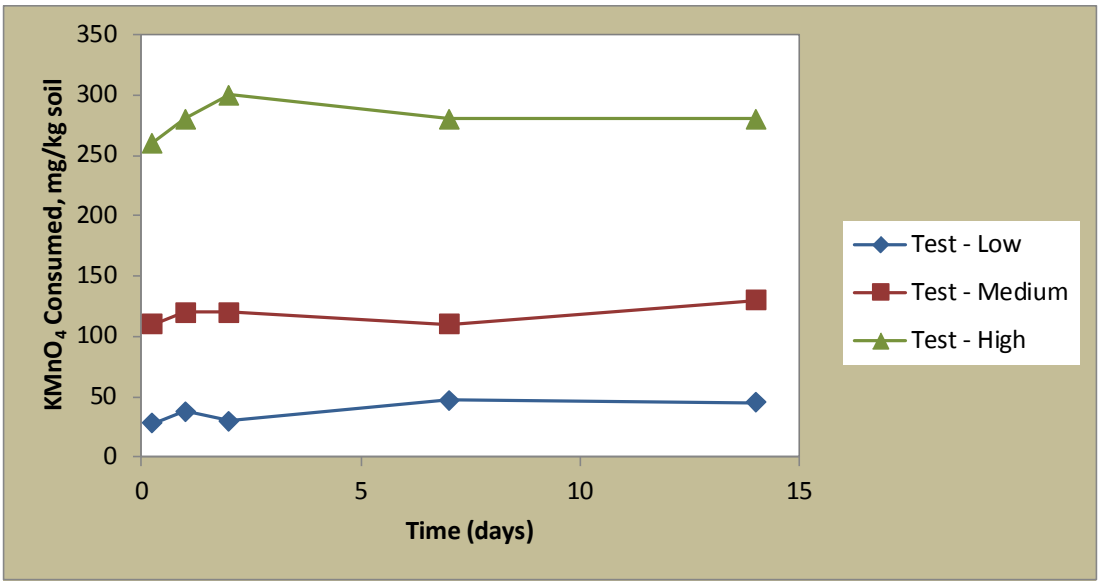


Figure 4. $KMnO_4$ SOD.

Table 7. COC Removal Results – COC Concentrations.

Analyte	Units	Test														
		Time 0	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
			7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Primary COCs																
1,4-dioxane	µg/L	1,000	820	880	590	300	< 0.50	< 0.50	220	440	38	7.2	870	820	820	570
vinyl chloride	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/L	410	400	390	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-dichloroethene	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
trichloroethene	µg/L	7,200	9,500	7,300	6,100	2,900	52	< 1.0	6,800	6000	< 2.0	12	< 1.0	< 1.0	< 1.0	< 1.0
tetrachloroethene	µg/L	< 100	< 50	< 100	< 40	< 40	1.1	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
Other VOCs																
Acetone	µg/L	< 2,000	< 1,000	< 2,000	< 800	< 800	23	20	< 1,000	< 1,600	45	< 100	< 20	< 20	18	< 20
1,1-dichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	3.1	< 5.0	3.5	3.1	3.9	3.0
1,2-dichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	2.2	< 5.0	2.4	1.9	2.4	1.7
Chloromethane	µg/L	< 400	< 200	< 400	< 160	< 160	< 4.0	< 4.0	< 200	< 320	< 8.0	35	< 4.0	< 4.0	< 4.0	< 4.0
Dichloromethane	µg/L	< 400	< 200	< 400	< 160	< 160	< 4.0	< 4.0	< 200	< 320	< 8.0	820	< 4.0	< 4.0	< 4.0	< 4.0
Chloroform	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	16	250	3.0	2.5	3.5	2.3
Bromodichloromethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	40	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	2.2	9.7	2.8	2.0	2.6	1.8

Table 8. COC Removal Results – Mass Balance.

Analyte	Test													
	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Percent Remaining (Relative to Time 0)														
1,4-dioxane	82	88	59	30	< 0.05	< 0.05	22	44	4	1	87	82	82	57
1,1-dichloroethene	98	95	< 10	< 10	< 0.2	< 0.2	< 12	< 20	< 0.5	< 1.2	< 0.2	< 0.2	< 0.2	< 0.2
trichloroethene	132	101	85	40	0.7	< 0.01	94	83	< 0.03	0	< 0.01	< 0.01	< 0.01	< 0.01
Percent Destroyed (Relative to Time 0)														
1,4-dioxane	18	12	41	70	> 99.95	> 99.95	78	56	96	99	13	18	18	43
1,1-dichloroethene	2.4	4.9	> 90	> 90	> 99.8	> 99.8	> 88	> 80	> 99.5	> 98	> 99.8	> 99.8	> 99.8	> 99.8
trichloroethene	-32	-1	15	60	99	> 99.99	5.6	17	> 99.97	99.8	> 99.99	> 99.99	> 99.99	> 99.99

groundwater but masked due to high concentrations of TCE. Concentrations were notably higher in the AP-Fe test, with chloroform present at 250 μg/L and dichloromethane present at 820 μg/L. It is likely that these compounds are reactive intermediates (formation of trihalomethanes by activated persulfate is known to occur) and that concentrations would have declined given a longer reaction time since SP was still present at 28 days (see **Section 3.4**).

3.4 Secondary Parameters

The effect of each oxidant on selected secondary water quality parameters is shown in **Table 9**. Chloride concentration did not change appreciably, ranging 640 mg/L and 680 mg/L. The variation was too great to confirm complete dechlorination of TCE, which would have increased the concentration of chloride by approximately 6 mg/L. ORP was elevated in the AP-Fe and $KMnO_4$ tests as expected due to the presence of oxidant. It was not elevated in the AP-pH tests despite the presence of SP due to matrix interference (high pH can bias ORP measurement low). The pH behaved as expected. It was elevated (above pH 11) in the AP-pH tests and unaffected in the low dose AP-Fe tests and the $KMnO_4$ tests. pH decreased to 2.2 by Day 28 in the AP-Fe high dose test due to decomposition of SP. None of the oxidants were significantly consumed over the course of the study with the exception of SP in the high dose AP-Fe test. By Day 28, over 90% of SP was still present in the AP-pH and low dose AP-Fe tests and over 87% of $KMnO_4$ was still present. In the high dose AP-Fe test, 40% of the SP was still present. Sulfate increased in the activated persulfate tests. The increase was small in most cases with sulfate increasing from 200 mg/L at Time 0 to up to 530 mg/L in the AP-pH tests and up to 340 mg/L in the low dose AP-Fe test. Sulfate increased to 4,300 mg/L in the high dose AP-Fe test. The increases were due to decomposition of SP.

3.5 Long-Term Soil Buffering

Buffering curves for acid and base ranges are presented in **Figures 5** and **6**, respectively. Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil neutralized 1 mmol H^+/kg soil, increasing the pH from 2.8 at Time 0 to 8.4 within 6 days, but when 10 mmol H^+/kg soil was added to soil, the pH rose from 2.1 at Time 0 to 5.0 by Day 13. For reference, 10 mmoles H^+ is the amount of acid that can be generated by decomposition of 1.2 g SP since SP decomposes to generate 2 moles H^+/mole SP = 8.4

mmoles H^+/g SP). In tests using base, soil reduced the pH from 11.9 to 10.2 within 2 days when exposed to 10 mmol OH^-/kg soil, but only reduced the pH from 13 to 12.6 within 12 days when exposed to 100 mmol OH^-/kg soil. Since alkaline activation of persulfate requires pH above about 11, more than 10 mmol OH-/kg soil must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Table 9. COC Removal Results - Secondary Parameters.

Analyte	Units	Test														
		Time 0	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
			7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Chloride	mg/L	670	640	650	650	670	650	680	650	660	650	660	650	650	660	670
Dissolved Metals																
Iron	mg/L	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	150	140	140	110	< 0.60	< 0.60	< 0.6	< 0.60
Manganese	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.10	< 0.01	0.019	0.02	0.3	0.036	3.1	71	71	280	290
ORP	mV	76	215	186	72	30	42	132	190	252	305	624	616	565	632	595
pH	--	7.3	7.3	7.3	11.5	11.5	12.6	12.7	7.1	6.9	6.3	2.2	7.2	7.2	7.2	7.2
Residual Permanganate	mg/L KMnO4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	218	212	950	950
Residual Persulfate	g/L SP	n.a.	n.a.	n.a.	0.9	1.0	9.5	9.5	0.9	0.9	8.6	4.0	n.a.	n.a.	n.a.	n.a.
Sulfate	mg/L	200	220	300	240	360	380	530	300	340	680	4,300	n.m.	n.m.	n.m.	n.m.

n.a. = not applicable

n.m. = not measured

Time (days)	0	0.01	1	2	3	5	6	12	13
None (DI Control)	-	9.1	9.0	8.9		9.0		8.8	
100 mmol H+/kg soil (pH 1)	1.4	1.3	1.6	1.9	1.8		2.1		2.3
10 mmol H+/kg soil (pH 2)	2.1	3.0	4.1	4.5	4.5		4.6		5.0
1 mmol H+/kg soil (pH 3)	2.8	7.0	8.5	8.5	8.3		8.4		

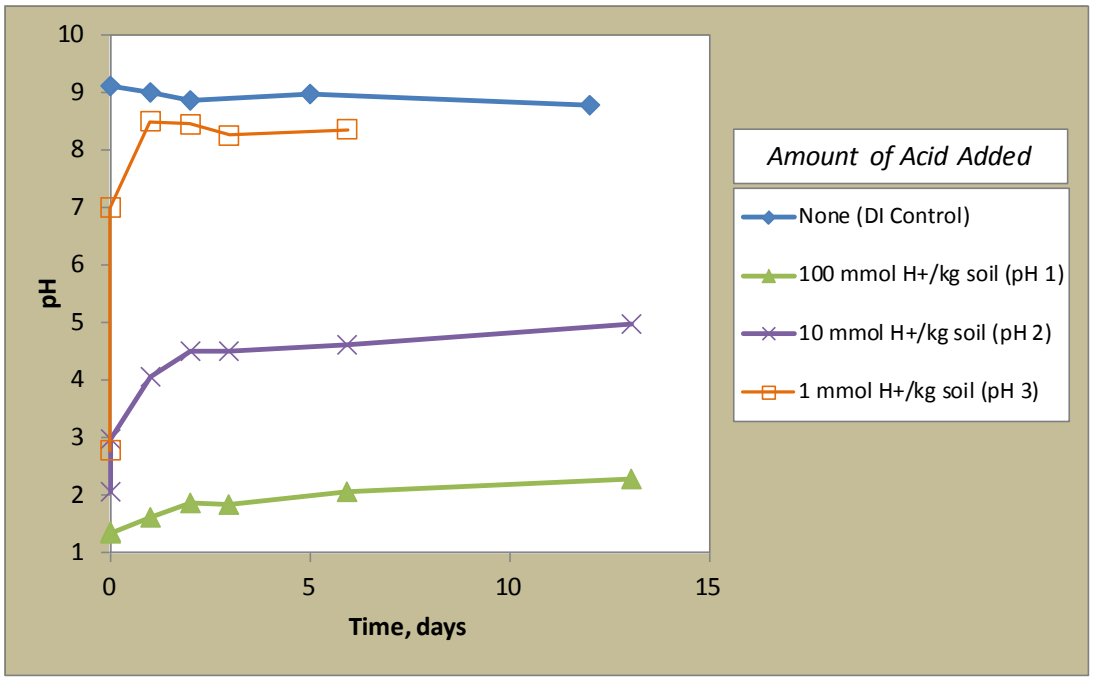


Figure 5. Buffering Curves – Acid Range.

Time (days)	0	0.01	1	2	5	12
None (DI Control)		9.1	9.0	8.9	9.0	8.8
100 mmol OH-/kg soil (pH 13)	13.0	12.5	12.6	12.4	12.6	12.6
10 mmol OH-/kg soil (pH 12)	11.9	10.9	10.5	10.2	10.1	10.2
1 mmol OH-/kg soil (pH 11)	10.6	9.6	9.4	9.2	9.3	9.2

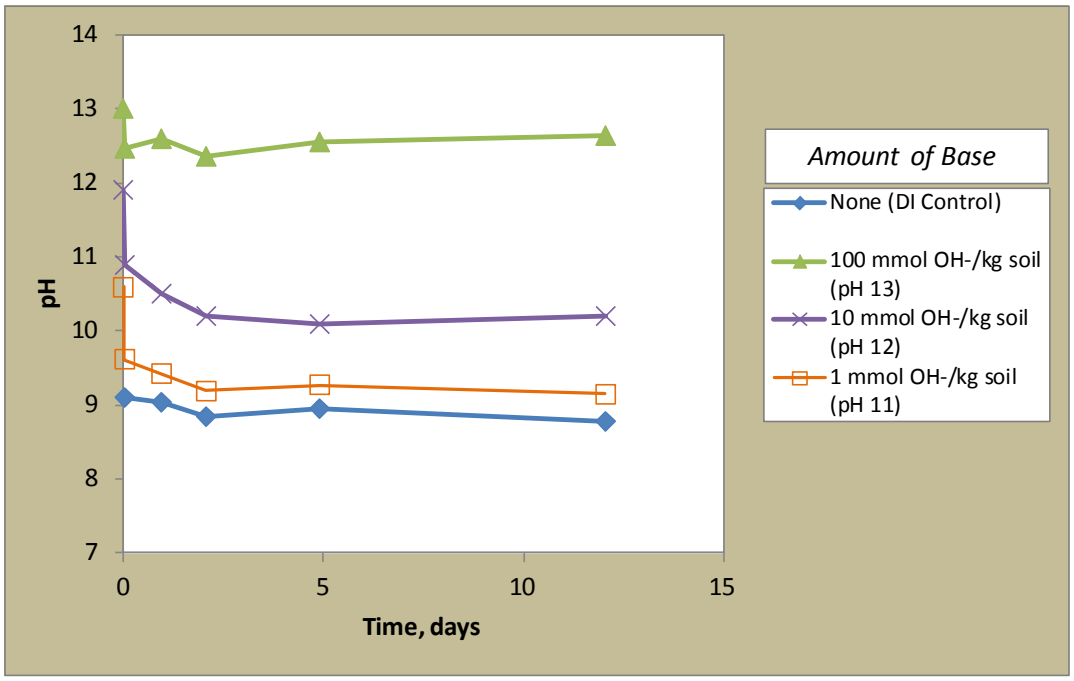


Figure 6. Buffering Curves – Base Range.

4.0 SUMMARY and CONCLUSIONS

Laboratory testing demonstrated that both AP-pH, AP-Fe, and $KMnO_4$ can destroy 1,4-dioxane and TCE, but the efficacy varied with oxidant and/or oxidant concentration. Low dose (1 g/L SP) AP-pH and AP-Fe tests destroyed 56-70% of 1,4-dioxane within 28 days and 17-60% TCE. In contrast, high dose tests (10 g/L SP), destroyed over 99% of 1,4-dioxane and TCE within 7 days. For $KMnO_4$, TCE was not detected in any sample, while 18% of 1,4-dioxane was destroyed within 28 days in the low dose (0.25 g/L $KMnO_4$) test and 43% was destroyed in the high dose test (1 g/L $KMnO_4$). In all tests, oxidant was still present at 28 days, indicating that additional treatment would likely occur given a longer contact time.

Several non-target VOCs, including trihalomethanes and 1,1,2-trichloroethane, were detected in the high dose AP-Fe and both of the $KMnO_4$ tests, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 μg/L and were most likely present in untreated groundwater, but masked by high concentrations of non-target VOCs. Concentrations of some compounds were notably higher (up to 820 μg/L) in the AP-Fe tests. Such compounds are reactive intermediates and are expected to be destroyed given longer reaction times.

Treatment with AP-pH increased the pH to above 11, but the pH should return to near-pretreatment conditions once SP is consumed. Treatment with the high dose AP-Fe decreased pH to 2.2. Treatment with $KMnO_4$ did not affect pH.

Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil buffered between 1 and 10 mmol H^+/kg soil, implying that it can neutralize the acid generated by decomposition of less than 1.2 g SP/kg soil. Soil also buffered between 10 and 100 mmol OH-/kg soil, indicating that more than 10 mmol OH-/kg soil (1.3 mL of 25% NaOH/kg soil) must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Based on the results of this study, PRIMA recommends that AP-pH or $KMnO_4$ be considered for use at this site. Both reacted with all COCs, though treatment of 1,4-

dioxane will likely be faster using AP-pH. PRIMA suggests not using AP-Fe because this oxidant could potentially significantly reduce groundwater pH.

APPENDIX A
(Chain of Custody)

APPENDIX B
(Analytical Reports)

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

June 07, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: H&A-Chandler

Order No.: PES1706003

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

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#: **PES1706003**
Report Date: **6/7/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 12:30:00 PM
Project: H&A-Chandler
Lab ID: 1706003-01
Matrix: AQUEOUS
Client Sample ID HA-Ch-GW

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloromethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
Vinyl chloride	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Bromomethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Acetone	ND	1600		µg/L	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethene	690	80		µg/L	6/2/2017	VOCs by EPA 8260
Dichloromethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chloroform	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Benzene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Trichloroethene	12000	80		µg/L	6/2/2017	VOCs by EPA 8260
Bromodichloromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Toluene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
Dibromochloromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Tetrachloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Ethylbenzene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
m,p-Xylene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
Bromoform	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
o-Xylene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: Toluene-d8	103	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	6/2/2017	VOCs by EPA 8260

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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Analytical Report

WO#: **PES1706003**
Report Date: **6/7/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 3:30:00 PM
Project: H&A-Chandler
Lab ID: 1706003-02
Matrix: SOIL
Client Sample ID HA-Ch-SO

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloromethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
Vinyl chloride	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromomethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Acetone	ND	200		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Dichloromethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chloroform	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Benzene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Trichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromodichloromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Toluene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
Dibromochloromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Tetrachloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Ethylbenzene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
m,p-Xylene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromoform	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
o-Xylene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	98	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: Toluene-d8	103	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	6/2/2017	VOCs by EPA 8260

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QC SUMMARY REPORT

WO#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **MB-1372** SampType: **MBLK** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/1/2017** RunNo: **888**
Client ID: **PBS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/1/2017** SeqNo: **22197**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	40									
Vinyl chloride	ND	20									
Chloroethane	ND	20									
Bromomethane	ND	40									
Trichlorofluoromethane	ND	20									
Acetone	ND	200									
1,1-Dichloroethene	ND	20									
Dichloromethane	ND	40									
trans-1,2-Dichloroethene	ND	20									
1,1-Dichloroethane	ND	20									
cis-1,2-Dichloroethene	ND	20									
Chloroform	ND	20									
1,2-Dichloroethane	ND	20									
1,1,1-Trichloroethane	ND	20									
Carbon tetrachloride	ND	20									
Benzene	ND	5									
1,2-Dichloropropane	ND	20									
Trichloroethene	ND	20									
Bromodichloromethane	ND	20									
cis-1,3-Dichloropropene	ND	20									
trans-1,3-Dichloropropene	ND	20									
1,1,2-Trichloroethane	ND	20									
Toluene	ND	5									

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **MB-1372** SampType: **MBLK** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/1/2017** RunNo: **888**
Client ID: **PBS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/1/2017** SeqNo: **22197**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	20									
Tetrachloroethene	ND	20									
Chlorobenzene	ND	20									
Ethylbenzene	ND	5									
m,p-Xylene	ND	5									
Bromoform	ND	20									
o-Xylene	ND	5									
1,1,2,2-Tetrachloroethane	ND	20									
1,3-Dichlorobenzene	ND	20									
1,4-Dichlorobenzene	ND	20									
1,2-Dichlorobenzene	ND	20									
Surr: 1,2-Dichloroethane-d4	190		200		96.8	69.51	130.49				
Surr: Toluene-d8	200		200		101	69.51	130.49				
Surr: 4-Bromofluorobenzene	190		200		92.6	69.51	130.49				

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	407	80	400	0	102	13.51	175.49	427	4.6	38	
Vinyl chloride	398	40	400	0	99.6	36.51	161.49	402	0.9	35	

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	61.1	40	400	0	15.3	9.51	130.49	59.5	2.7	40	
Bromomethane	177	80	400	0	44.3	9.51	130.49	160	10	39	
Trichlorofluoromethane	124	40	400	0	31.0	9.51	130.49	114	8.3	40	
Acetone	7910	400	8000	0	98.9	9.51	186.49	7210	9.3	40	
1,1-Dichloroethene	284	40	400	0	70.9	9.51	131.49	362	24	40	
Dichloromethane	369	80	400	0	92.1	61.51	138.49	375	1.8	38	
trans-1,2-Dichloroethene	414	40	400	0	104	69.51	148.49	378	9.2	29	
1,1-Dichloroethane	406	40	400	0	101	66.51	141.49	370	9.2	29	
cis-1,2-Dichloroethene	394	40	400	0	98.5	69.51	142.49	361	8.8	29	
Chloroform	405	40	400	0	101	64.51	136.49	367	9.7	27	
1,2-Dichloroethane	368	40	400	0	91.9	60.51	142.49	329	11	28	
1,1,1-Trichloroethane	386	40	400	0	96.4	60.51	152.49	347	10	30	
Carbon tetrachloride	373	40	400	0	93.1	49.51	146.49	340	9.1	32	
Benzene	385	10	400	0	96.3	69.51	137.49	353	8.7	30	
1,2-Dichloropropane	377	40	400	0	94.2	67.51	142.49	346	8.5	27	
Trichloroethene	398	40	400	0	99.6	69.51	149.49	350	13	29	
Bromodichloromethane	366	40	400	0	91.5	61.51	138.49	326	12	28	
cis-1,3-Dichloropropene	389	40	400	0	97.3	60.51	141.49	347	11	28	
trans-1,3-Dichloropropene	387	40	400	0	96.8	54.51	143.49	343	12	27	
1,1,2-Trichloroethane	379	40	400	0	94.8	66.51	137.49	347	8.8	40	
Toluene	385	10	400	0	96.2	69.51	139.49	339	13	28	
Dibromochloromethane	366	40	400	0	91.6	57.51	134.49	321	13	31	
Tetrachloroethene	415	40	400	0	104	69.51	159.49	360	14	36	

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	404	40	400	0	101	69.51	137.49	361	11	40	
Ethylbenzene	394	10	400	0	98.5	69.51	137.49	353	11	37	
m,p-Xylene	404	10	400	0	101	69.51	145.49	353	13	34	
Bromoform	372	40	400	0	92.9	47.51	135.49	333	11	32	
o-Xylene	407	10	400	0	102	69.51	145.49	361	12	40	
1,1,2,2-Tetrachloroethane	354	40	400	0	88.6	55.51	136.49	330	7.1	40	
1,3-Dichlorobenzene	373	40	400	0	93.3	69.51	141.49	338	9.8	28	
1,4-Dichlorobenzene	379	40	400	0	94.8	69.51	138.49	344	9.9	28	
1,2-Dichlorobenzene	363	40	400	0	90.8	69.51	130.49	328	10	29	
Surr: 1,2-Dichloroethane-d4	396		400		99.0	69.51	130.49	398		0	
Surr: Toluene-d8	395		400		98.6	69.51	130.49	393		0	
Surr: 4-Bromofluorobenzene	371		400		92.6	69.51	130.49	360		0	

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	427	80	400	0	107	13.51	175.49				
Vinyl chloride	402	40	400	0	100	36.51	161.49				
Chloroethane	59.5	40	400	0	14.9	9.51	130.49				
Bromomethane	160	80	400	0	40.0	9.51	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	114	40	400	0	28.6	9.51	130.49				
Acetone	7210	400	8000	0	90.1	9.51	186.49				
1,1-Dichloroethene	362	40	400	0	90.4	9.51	131.49				
Dichloromethane	375	80	400	0	93.8	61.51	138.49				
trans-1,2-Dichloroethene	378	40	400	0	94.5	69.51	148.49				
1,1-Dichloroethane	370	40	400	0	92.5	66.51	141.49				
cis-1,2-Dichloroethene	361	40	400	0	90.1	69.51	142.49				
Chloroform	367	40	400	0	91.8	64.51	136.49				
1,2-Dichloroethane	329	40	400	0	82.2	60.51	142.49				
1,1,1-Trichloroethane	347	40	400	0	86.9	60.51	152.49				
Carbon tetrachloride	340	40	400	0	85.0	49.51	146.49				
Benzene	353	10	400	0	88.3	69.51	137.49				
1,2-Dichloropropane	346	40	400	0	86.5	67.51	142.49				
Trichloroethene	350	40	400	0	87.6	69.51	149.49				
Bromodichloromethane	326	40	400	0	81.4	61.51	138.49				
cis-1,3-Dichloropropene	347	40	400	0	86.8	60.51	141.49				
trans-1,3-Dichloropropene	343	40	400	0	85.7	54.51	143.49				
1,1,2-Trichloroethane	347	40	400	0	86.8	66.51	137.49				
Toluene	339	10	400	0	84.8	69.51	139.49				
Dibromochloromethane	321	40	400	0	80.2	57.51	134.49				
Tetrachloroethene	360	40	400	0	90.0	69.51	159.49				
Chlorobenzene	361	40	400	0	90.4	69.51	137.49				
Ethylbenzene	353	10	400	0	88.3	69.51	137.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	353	10	400	0	88.3	69.51	145.49				
Bromoform	333	40	400	0	83.3	47.51	135.49				
o-Xylene	361	10	400	0	90.3	69.51	145.49				
1,1,2,2-Tetrachloroethane	330	40	400	0	82.5	55.51	136.49				
1,3-Dichlorobenzene	338	40	400	0	84.6	69.51	141.49				
1,4-Dichlorobenzene	344	40	400	0	85.9	69.51	138.49				
1,2-Dichlorobenzene	328	40	400	0	82.1	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	398		400		99.5	69.51	130.49				
Surr: Toluene-d8	393		400		98.4	69.51	130.49				
Surr: 4-Bromofluorobenzene	360		400		90.1	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **MB-1389** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **PBW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22229**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.5									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.5									

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **MB-1389** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **PBW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22229**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	0.5									
Bromoform	ND	1									
o-Xylene	ND	0.5									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.4		10		94.3	69.51	130.49				
Surr: Toluene-d8	10		10		103	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.8		10		98.1	69.51	130.49				

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	10	2	10	0	100	39.51	145.49				
Vinyl chloride	9.68	1	10	0	96.8	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	12.3	1	10	0	124	37.51	156.49				
Bromomethane	10.4	2	10	0	104	13.51	162.49				
Trichlorofluoromethane	9.45	1	10	0	94.5	45.51	154.49				
Acetone	193	10	200	0	96.7	21.51	188.49				
1,1-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
Dichloromethane	10.8	2	10	0	108	68.51	130.49				
trans-1,2-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
1,1-Dichloroethane	8.39	1	10	0	83.9	69.51	130.49				
cis-1,2-Dichloroethene	9.28	1	10	0	92.8	69.51	130.49				
Chloroform	10	1	10	0	100	69.51	130.49				
1,2-Dichloroethane	9.11	1	10	0	91.1	69.51	133.49				
1,1,1-Trichloroethane	9.26	1	10	0	92.6	69.51	135.49				
Carbon tetrachloride	9.32	1	10	0	93.2	62.51	143.49				
Benzene	9.29	0.5	10	0	92.9	69.51	130.49				
1,2-Dichloropropane	9.05	1	10	0	90.5	69.51	130.49				
Trichloroethene	9.24	1	10	0	92.4	67.51	138.49				
Bromodichloromethane	9.15	1	10	0	91.5	57.51	147.49				
cis-1,3-Dichloropropene	9.57	1	10	0	95.7	69.51	130.49				
trans-1,3-Dichloropropene	9.5	1	10	0	95.0	69.51	131.49				
1,1,2-Trichloroethane	9.01	1	10	0	90.1	69.51	130.49				
Toluene	8.9	0.5	10	0	89.0	69.51	130.49				
Dibromochloromethane	8.59	1	10	0	85.9	48.51	147.49				
Tetrachloroethene	9.39	1	10	0	93.9	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	9.64	1	10	0	96.4	69.51	130.49				
Ethylbenzene	9.21	0.5	10	0	92.1	69.51	130.49				
m,p-Xylene	9.28	0.5	10	0	92.8	64.51	139.49				
Bromoform	8.7	1	10	0	87.0	59.51	144.49				
o-Xylene	9.2	0.5	10	0	92.0	69.51	130.49				
1,1,2,2-Tetrachloroethane	8.33	1	10	0	83.3	69.51	130.49				
1,3-Dichlorobenzene	8.94	1	10	0	89.4	69.51	130.49				
1,4-Dichlorobenzene	8.97	1	10	0	89.7	69.51	130.49				
1,2-Dichlorobenzene	8.65	1	10	0	86.5	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	10.3		10		103	69.51	130.49				
Surr: Toluene-d8	9.69		10		96.9	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.16		10		91.6	69.51	130.49				

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	57.8	10	50	0	116	25.51	146.49	47.1	20	30	
Vinyl chloride	63.9	5	50	0	128	45.51	142.49	54.7	15	30	
Chloroethane	104	5	50	0	208	24.51	164.49	77.3	30	30	S
Bromomethane	68.8	10	50	0	138	9.51	172.49	60.8	12	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	74	5	50	0	148	31.51	164.49	65.3	13	30	
Acetone	1390	50	1000	0	139	9.51	188.49	1330	5.1	30	
1,1-Dichloroethene	68.8	5	50	0	138	61.51	133.49	61.7	11	30	S
Dichloromethane	71.6	10	50	0	143	68.51	130.49	66.8	7	30	S
trans-1,2-Dichloroethene	67.5	5	50	0	135	66.51	131.49	62.1	8.4	30	S
1,1-Dichloroethane	58.8	5	50	0	118	66.51	130.49	55.3	6.1	30	
cis-1,2-Dichloroethene	53.4	5	50	0	107	69.51	130.49	48.9	8.9	30	
Chloroform	57.1	5	50	0	114	68.51	130.49	53.1	7.3	30	
1,2-Dichloroethane	55	5	50	0	110	63.51	139.49	53	3.6	30	
1,1,1-Trichloroethane	52.6	5	50	0	105	64.51	139.49	49.7	5.8	30	
Carbon tetrachloride	52.8	5	50	0	106	55.51	146.49	48.7	8	30	
Benzene	53.4	2.5	50	0	107	66.51	134.49	50.3	6	30	
1,2-Dichloropropane	55.1	5	50	0	110	68.51	134.49	51.2	7.5	30	
Trichloroethene	53.2	5	50	0	106	67.51	138.49	49.3	7.6	30	
Bromodichloromethane	53.9	5	50	0	108	57.51	147.49	50.6	6.2	30	
cis-1,3-Dichloropropene	48.2	5	50	0	96.4	60.51	130.49	44.6	7.8	30	
trans-1,3-Dichloropropene	53.4	5	50	0	107	61.51	131.49	49.3	7.9	30	
1,1,2-Trichloroethane	55.1	5	50	0	110	69.51	131.49	52.3	5.1	30	
Toluene	51.3	2.5	50	0	103	37.51	130.49	48	6.5	30	
Dibromochloromethane	50.3	5	50	0	101	48.51	147.49	46.5	7.9	30	
Tetrachloroethene	54.3	5	50	0	109	62.51	134.49	51.8	4.9	30	
Chlorobenzene	56.2	5	50	0	112	69.51	130.49	53.1	5.7	30	
Ethylbenzene	54.6	2.5	50	0	109	69.51	130.49	50.5	7.8	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	55.7	2.5	50	0	111	64.51	139.49	51.6	7.5	30	
Bromoform	52.9	5	50	0	106	59.51	144.49	48.7	8.3	30	
o-Xylene	55.8	2.5	50	0	112	68.51	130.49	52.4	6.3	30	
1,1,2,2-Tetrachloroethane	52.3	5	50	0	105	66.51	134.49	48.8	6.8	30	
1,3-Dichlorobenzene	50.5	5	50	0	101	69.51	130.49	45.7	10	30	
1,4-Dichlorobenzene	51.2	5	50	0	102	69.51	130.49	47	8.6	30	
1,2-Dichlorobenzene	49.6	5	50	0	99.3	69.51	130.49	46.2	7.3	30	
Surr: 1,2-Dichloroethane-d4	54.1		50		108	69.51	130.49	53.9		0	
Surr: Toluene-d8	48		50		96.0	69.51	130.49	48.2		0	
Surr: 4-Bromofluorobenzene	43.8		50		87.6	69.51	130.49	43.1		0	

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	47.1	10	50	0	94.2	25.51	146.49				
Vinyl chloride	54.7	5	50	0	109	45.51	142.49				
Chloroethane	77.3	5	50	0	154	24.51	164.49				
Bromomethane	60.8	10	50	0	122	9.51	172.49				
Trichlorofluoromethane	65.3	5	50	0	131	31.51	164.49				
Acetone	1330	50	1000	0	133	9.51	188.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	61.7	5	50	0	123	61.51	133.49				
Dichloromethane	66.8	10	50	0	134	68.51	130.49				S
trans-1,2-Dichloroethene	62.1	5	50	0	124	66.51	131.49				
1,1-Dichloroethane	55.3	5	50	0	111	66.51	130.49				
cis-1,2-Dichloroethene	48.9	5	50	0	97.8	69.51	130.49				
Chloroform	53.1	5	50	0	106	68.51	130.49				
1,2-Dichloroethane	53	5	50	0	106	63.51	139.49				
1,1,1-Trichloroethane	49.7	5	50	0	99.3	64.51	139.49				
Carbon tetrachloride	48.7	5	50	0	97.4	55.51	146.49				
Benzene	50.3	2.5	50	0	101	66.51	134.49				
1,2-Dichloropropane	51.2	5	50	0	102	68.51	134.49				
Trichloroethene	49.3	5	50	0	98.6	67.51	138.49				
Bromodichloromethane	50.6	5	50	0	101	57.51	147.49				
cis-1,3-Dichloropropene	44.6	5	50	0	89.1	60.51	130.49				
trans-1,3-Dichloropropene	49.3	5	50	0	98.6	61.51	131.49				
1,1,2-Trichloroethane	52.3	5	50	0	105	69.51	131.49				
Toluene	48	2.5	50	0	96.0	37.51	130.49				
Dibromochloromethane	46.5	5	50	0	93.0	48.51	147.49				
Tetrachloroethene	51.8	5	50	0	104	62.51	134.49				
Chlorobenzene	53.1	5	50	0	106	69.51	130.49				
Ethylbenzene	50.5	2.5	50	0	101	69.51	130.49				
m,p-Xylene	51.6	2.5	50	0	103	64.51	139.49				
Bromoform	48.7	5	50	0	97.3	59.51	144.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	52.4	2.5	50	0	105	68.51	130.49				
1,1,2,2-Tetrachloroethane	48.8	5	50	0	97.7	66.51	134.49				
1,3-Dichlorobenzene	45.7	5	50	0	91.4	69.51	130.49				
1,4-Dichlorobenzene	47	5	50	0	94.0	69.51	130.49				
1,2-Dichlorobenzene	46.2	5	50	0	92.3	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	53.9		50		108	69.51	130.49				
Surr: Toluene-d8	48.2		50		96.4	69.51	130.49				
Surr: 4-Bromofluorobenzene	43.1		50		86.2	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#: **1706003**
Date: **6/5/2017**

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.

S54 = Surrogate recovery was below laboratory acceptance limits.

S55 = Surrogate recovery was above laboratory acceptance limits.

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Definition Only

WO#: **1706003**

Date: **6/5/2017**

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

RUSH

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706003
Report Due By: 05-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: H&A-Chandler

Date Received: 01-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests VOC_S	VOC_W						Sample Remarks
PES1706003-01	HA-Ch-GW	AQ	5/31/2017 12:30:00 PM	3	0	2		A - 8260/ Acetone_Cs						
PES1706003-02	HA-Ch-SO	SO	5/31/2017 3:30:00 PM	1	0	2	A - 8260/ Acetone_Cs							

Comments: 48 HR TAT. Chain split into two separate work orders due to different TATs.

	Signature	Print Name	Company	Date/Time
Logged in by:	KMurray	KMurray	Alpha Analytical, Inc.	6/1/17 1035

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

CHAIN OF CUSTODY

2854

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: H&A-Chandler
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Alkalinity-310	Chloride-300	*Metals-6020							Remarks
1230	5/31/17	AQ	PES1706003-01	~~H&A~~ HA-ch-GW	48hr	3V		X	X										
1530	5/31/17	So	02	HA-ch-So	↓	1S		X	X										
1630	5/31/17	AQ	—	HA-ch-GW	STD	2P	X			X	X	X							
1530	5/31/17	So	—	HA-ch-So	STD	—		X				X							

ADDITIONAL INSTRUCTIONS:
*Metals = Cr, Fe, Mn

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 445.0636 (c) (2).

Sampled By: CR

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation)	Date:	Time:
Cathleen Ryan	5/31/17	1730	FED EX	—	—
			K Murray	6/1/17	1025

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

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

June 15, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: H&A-Chandler

Order No.: PES1706004

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

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#: **PES1706004**
Report Date: **6/15/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 12:30:00 PM
Project: H&A-Chandler
Lab ID: 1706004-01
Matrix: AQUEOUS
Client Sample ID HA-Ch-GW

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	680	50		mg/L	6/2/2017	Anions by EPA 300.0
Alkalinity, Total (As CaCO3 at pH 4.5)	420	20		mg/L	6/6/2017	Alkalinity by SM2320B
Chromium (Cr)	ND	0.020		mg/L	6/7/2017	Metals by EPA 200.8
Manganese (Mn)	1.3	0.010		mg/L	6/7/2017	Metals by EPA 200.8
Iron (Fe)	6.6	0.60		mg/L	6/7/2017	Metals by EPA 200.8

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1706004**
Report Date: **6/15/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 3:30:00 PM
Project: H&A-Chandler
Lab ID: 1706004-02
Matrix: SOIL
Client Sample ID HA-Ch-SO

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chromium (Cr)	8.1	1.0		mg/Kg	6/13/2017	Metals by EPA 6020
Manganese (Mn)	170	1.0		mg/Kg	6/13/2017	Metals by EPA 6020
Iron (Fe)	8300	500		mg/Kg	6/13/2017	Metals by EPA 6020

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QC SUMMARY REPORT

WO#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **300_0_W**

Sample ID: **MB-1376** SampType: **MBLK** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **PBW** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID: **LCS-1376** SampType: **LCS** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **LCSW** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	51.2	0.5	50	0	102	89.51	110.49				

Sample ID: **1705312-01BMSD** SampType: **MSD** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **BatchQC** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21940**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	283	2.5	250	30.77	101	79.51	120.49	282	0.087	15	

Sample ID: **1705312-01BMS** SampType: **MS** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **BatchQC** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21939**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	282	2.5	250	30.77	101	79.51	120.49				

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#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **300_0_W**

Sample ID:	**1705312-01BMS**	SampType:	**MS**	TestCode:	**300_0_W**	Units:	**mg/L**	Prep Date:	**6/1/2017**	RunNo:	**898**
Client ID:	**BatchQC**	Batch ID:	**1376**	TestNo:	**E300.0**			Analysis Date:	**6/2/2017**	SeqNo:	**21939**

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#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **ALKALINITY_W**

Sample ID: **WC170517-01** SampType: **LCS** TestCode: **ALKALINITY_** Units: **mg/L** Prep Date: **6/6/2017** RunNo: **925**
Client ID: **LCSW** Batch ID: **W0606AL_A** TestNo: **Alkalinity** Analysis Date: **6/6/2017** SeqNo: **22620**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3 at pH 4.5)	219	10	250	0	87.8	79.51	120.49				

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#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **METALS_SO**

Sample ID: **MB-1433** SampType: **MBLK** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **PBS** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23317**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	1									
Manganese (Mn)	ND	1									
Iron (Fe)	ND	500									

Sample ID: **LCS-1433** SampType: **LCS** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **LCSS** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23319**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	28.5	1	25	0	114	79.51	120.49				
Manganese (Mn)	282	1	250	0	113	79.51	120.49				
Iron (Fe)	5320	500	5000	0	106	79.51	120.49				

Sample ID: **1706056-01AMSD** SampType: **MSD** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **BatchQC** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	38.9	1	25	13.35	102	74.51	125.49	42.2	8	20	
Manganese (Mn)	613	1	250	306.8	123	74.51	125.49	667	8.4	20	
Iron (Fe)	23700	500	5000	0	156	74.51	125.49	28800	20	20	S

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#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **METALS_T_200_8**

Sample ID: **MB-1409** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **PBW** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	0.01									
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID: **LCS-1409** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **LCSW** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23280**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.268	0.02	0.25	0	107	84.51	115.49				
Manganese (Mn)	2.68	0.01	2.5	0	107	84.51	115.49				
Iron (Fe)	52.9	0.6	50	0	106	84.51	115.49				

Sample ID: **1705222-02AMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **BatchQC** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.3	0.02	0.25	0	113	69.51	130.49	0.282	6.3	20	
Manganese (Mn)	4.03	0.01	2.5	1.227	112	69.51	130.49	3.84	4.9	20	
Iron (Fe)	56.5	0.6	50	3.663	106	69.51	130.49	56.2	0.6	20	

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#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **METALS_T_200_8**

Sample ID: **1705222-02AMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **BatchQC** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23281**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.282	0.02	0.25	0	106	69.51	130.49				
Manganese (Mn)	3.84	0.01	2.5	1.227	104	69.51	130.49				
Iron (Fe)	56.2	0.6	50	3.663	105	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#: **1706004**

Date:

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#: **1706004**

Date:

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706004
Report Due By: 15-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: H&A-Chandler

Date Received: 01-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	ALKALINITY_W	METALS_SO	METALS_T_200_8				Sample Remarks
PES1706004-01	HA-Ch-GW	AQ	5/31/2017 12:30:00 PM	2	0	10	A - Cl	A - Alk		B - Cr, Fe, Mn				
PES1706004-02	HA-Ch-SO	SO	5/31/2017 3:30:00 PM	1	0	10			A - Cr, Fe, Mn					

Comments: Chain split into two separate work orders due to different TATs.

	Signature	Print Name	Company	Date/Time
Logged in by:	KMurray	K Murray	Alpha Analytical, Inc.	6/1/17 1050

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

CHAIN OF CUSTODY

2854

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044
Fax: 775-355-0406
Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: HSA-Chandlar
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Alkalinity-310	Chloride-300	Metals-6020							Remarks
1230	5/31/17	AQ	—	HA-ch-GW	48hr	3V		X	X										
1530	5/31/17	So	—	HA-ch-So	↓	1S		X	X										
1230	5/31/17	AQ	PES1706004-01	HA-ch-GW	STD	2P	X			X	X	X							
1530	5/31/17	So	02	HA-ch-So	STD	—		X				X							

ADDITIONAL INSTRUCTIONS:
*metals = Cr, Fe, Mn

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 445.0636 (c) (2).

Sampled By: CR

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation):	Date:	Time:
[signature]	5/31/17	1730	FED EX	—	—
			[signature]	6/1/17	1040

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc
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Sparks, Nevada 89431
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June 19, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: HA-Chand

Order No.: PES1706148

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

Roger Scholl

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

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1706148**
Report Date: **6/19/2017**

CLIENT: Prima Environmental
Collection Date: 6/13/2017 6:10:00 PM
Project: HA-Chand
Lab ID: 1706148-01
Matrix: AQUEOUS
Client Sample ID HA-Chan-To

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	6/15/2017	Anions by EPA 300.0
Chromium (Cr)	ND	0.020		mg/L	6/16/2017	Metals by EPA 200.8
Manganese (Mn)	ND	0.010		mg/L	6/16/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	6/16/2017	Metals by EPA 200.8
Chloromethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
Vinyl chloride	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Bromomethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Acetone	ND	2,000		µg/L	6/16/2017	VOCs by EPA 8260
1,1-Dichloroethene	410	100		µg/L	6/16/2017	VOCs by EPA 8260
Dichloromethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chloroform	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Benzene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Trichloroethene	7200	100		µg/L	6/16/2017	VOCs by EPA 8260
Bromodichloromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Toluene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
Dibromochloromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Tetrachloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Ethylbenzene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
m,p-Xylene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
Bromoform	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
o-Xylene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	6/16/2017	VOCs by EPA 8260
Surr: Toluene-d8	101	70-130		%Rec	6/16/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	6/16/2017	VOCs by EPA 8260

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **300_0_W**

Sample ID	**MB-1494**	SampType: **MBLK**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**PBW**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID	**LCS-1494**	SampType: **LCS**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**LCSW**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.6	0.5	50	0	99.1	89.51	110.49				

Sample ID	**1706146-05BMSD**	SampType: **MSD**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**BatchQC**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25176**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	272	2.5	250	23.02	99.4	79.51	120.49	272	0.092	15	

Sample ID	**1706146-05BMS**	SampType: **MS**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**BatchQC**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25175**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	272	2.5	250	23.02	99.5	79.51	120.49				

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

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QC SUMMARY REPORT

WO#: **1706148**

19-Jun-17

Client: Prima Environmental
Project: HA-Chand

TestCode: **300_0_W**

Sample ID	**1706146-05BMS**	SampType:	**MS**	TestCode:	**300_0_W**	Units:	**mg/L**	Prep Date:	**6/15/2017**	RunNo:	**1030**		
Client ID:	**BatchQC**	Batch ID:	**1494**	TestNo:	**E300.0**			Analysis Date:	**6/15/2017**	SeqNo:	**25175**		

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 limit

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **METALS_T_200_8**

Sample ID **MB-1491** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **PBW** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25231**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	0.01									
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID **LCS-1491** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **LCSW** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.267	0.02	0.25	0	107	84.51	115.49				
Manganese (Mn)	2.66	0.01	2.5	0	106	84.51	115.49				
Iron (Fe)	55.6	0.6	50	0	111	84.51	115.49				

Sample ID **1706141-02DMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **BatchQC** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.267	0.02	0.25	0	107	69.51	130.49	0.232	14	20	
Manganese (Mn)	2.66	0.01	2.5	0	106	69.51	130.49	2.33	13	20	
Iron (Fe)	55.8	0.6	50	0	112	69.51	130.49	54	3.2	20	

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **METALS_T_200_8**

Sample ID **1706141-02DMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **BatchQC** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.232	0.02	0.25	0	93.0	69.51	130.49				
Manganese (Mn)	2.33	0.01	2.5	0	93.1	69.51	130.49				
Iron (Fe)	54	0.6	50	0	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 limit

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **MB-1500** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **PBW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.5									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.5									

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **MB-1500** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **PBW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	0.5									
Bromoform	ND	1									
o-Xylene	ND	0.5									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.1		10		90.7	69.51	130.49				
Surr: Toluene-d8	11		10		106	69.51	130.49				
Surr: 4-Bromofluorobenzene	12		10		116	69.51	130.49				

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	10.3	2	10	0	104	39.51	145.49				
Vinyl chloride	8.37	1	10	0	83.7	69.51	130.49				

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	10.8	1	10	0	108	37.51	156.49				
Bromomethane	8.71	2	10	0	87.1	13.51	162.49				
Trichlorofluoromethane	10.6	1	10	0	106	45.51	154.49				
Acetone	233	10	200	0	116	21.51	188.49				
1,1-Dichloroethene	8.76	1	10	0	87.6	69.51	130.49				
Dichloromethane	9.29	2	10	0	92.9	68.51	130.49				
trans-1,2-Dichloroethene	9.64	1	10	0	96.4	69.51	130.49				
1,1-Dichloroethane	9.77	1	10	0	97.7	69.51	130.49				
cis-1,2-Dichloroethene	8.79	1	10	0	87.9	69.51	130.49				
Chloroform	9.35	1	10	0	93.5	69.51	130.49				
1,2-Dichloroethane	10.3	1	10	0	104	69.51	133.49				
1,1,1-Trichloroethane	10.4	1	10	0	104	69.51	135.49				
Carbon tetrachloride	9.54	1	10	0	95.4	62.51	143.49				
Benzene	9.8	0.5	10	0	98.0	69.51	130.49				
1,2-Dichloropropane	10.3	1	10	0	103	69.51	130.49				
Trichloroethene	8.63	1	10	0	86.3	67.51	138.49				
Bromodichloromethane	9.06	1	10	0	90.6	57.51	147.49				
cis-1,3-Dichloropropene	8.94	1	10	0	89.4	69.51	130.49				
trans-1,3-Dichloropropene	9.19	1	10	0	91.9	69.51	131.49				
1,1,2-Trichloroethane	9.52	1	10	0	95.2	69.51	130.49				
Toluene	9.59	0.5	10	0	95.9	69.51	130.49				
Dibromochloromethane	9.58	1	10	0	95.8	48.51	147.49				
Tetrachloroethene	8.81	1	10	0	88.1	69.51	130.49				

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	9.17	1	10	0	91.7	69.51	130.49				
Ethylbenzene	10.2	0.5	10	0	102	69.51	130.49				
m,p-Xylene	9.65	0.5	10	0	96.5	64.51	139.49				
Bromoform	9.45	1	10	0	94.5	59.51	144.49				
o-Xylene	8.43	0.5	10	0	84.3	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.31	1	10	0	93.1	69.51	130.49				
1,3-Dichlorobenzene	9.74	1	10	0	97.4	69.51	130.49				
1,4-Dichlorobenzene	9.74	1	10	0	97.4	69.51	130.49				
1,2-Dichlorobenzene	9.4	1	10	0	94.0	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	10.7		10		106	69.51	130.49				
Surr: Toluene-d8	9.93		10		99.3	69.51	130.49				
Surr: 4-Bromofluorobenzene	10.1		10		101	69.51	130.49				

Sample ID **1706146-05AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	52.4	10	50	0	105	25.51	146.49	49.7	5.2	30	
Vinyl chloride	40.9	5	50	0	81.7	45.51	142.49	39	4.5	30	
Chloroethane	55.1	5	50	0	110	24.51	164.49	56.1	1.8	30	
Bromomethane	48.6	10	50	0	97.2	9.51	172.49	35.5	31	30	R

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	51	5	50	0	102	31.51	164.49	51	0.078	30	
Acetone	953	50	1000	0	95.3	9.51	188.49	913	4.3	30	
1,1-Dichloroethene	41.7	5	50	0	83.5	61.51	133.49	40.3	3.4	30	
Dichloromethane	45	10	50	0	89.9	68.51	130.49	43.8	2.6	30	
trans-1,2-Dichloroethene	45.6	5	50	0	91.2	66.51	131.49	43.8	4.1	30	
1,1-Dichloroethane	48.2	5	50	0	96.4	66.51	130.49	47.2	2.1	30	
cis-1,2-Dichloroethene	42.2	5	50	0	84.3	69.51	130.49	40.9	3	30	
Chloroform	47	5	50	0	93.9	68.51	130.49	45.6	2.9	30	
1,2-Dichloroethane	53.3	5	50	0	107	63.51	139.49	52.1	2.3	30	
1,1,1-Trichloroethane	51.1	5	50	0	102	64.51	139.49	50.8	0.63	30	
Carbon tetrachloride	46.8	5	50	0	93.7	55.51	146.49	46.7	0.26	30	
Benzene	47.1	2.5	50	0	94.2	66.51	134.49	46.4	1.5	30	
1,2-Dichloropropane	52	5	50	0	104	68.51	134.49	51.6	0.71	30	
Trichloroethene	40.9	5	50	0	81.9	67.51	138.49	40	2.4	30	
Bromodichloromethane	45.5	5	50	0	91.0	57.51	147.49	44.7	1.8	30	
cis-1,3-Dichloropropene	39.6	5	50	0	79.2	60.51	130.49	38.5	2.8	30	
trans-1,3-Dichloropropene	41.7	5	50	0	83.3	61.51	131.49	40.1	3.7	30	
1,1,2-Trichloroethane	45	5	50	0	90.0	69.51	131.49	44	2.2	30	
Toluene	46.1	2.5	50	0	92.2	37.51	130.49	45.3	1.8	30	
Dibromochloromethane	45	5	50	0	90.0	48.51	147.49	44	2.3	30	
Tetrachloroethene	60.8	5	50	0	82.1	62.51	134.49	59.7	1.8	30	
Chlorobenzene	42.8	5	50	0	85.5	69.51	130.49	42.3	1.2	30	
Ethylbenzene	47.4	2.5	50	0	94.8	69.51	130.49	46.8	1.4	30	

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **1706146-05AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	44.7	2.5	50	0	89.3	64.51	139.49	44.2	1.1	30	
Bromoform	44.6	5	50	0	89.3	59.51	144.49	42.8	4.1	30	
o-Xylene	39.6	2.5	50	0	79.2	68.51	130.49	39.4	0.63	30	
1,1,2,2-Tetrachloroethane	44.6	5	50	0	89.3	66.51	134.49	43.2	3.3	30	
1,3-Dichlorobenzene	46.2	5	50	0	92.5	69.51	130.49	45.9	0.74	30	
1,4-Dichlorobenzene	46.2	5	50	0	92.5	69.51	130.49	45.4	1.8	30	
1,2-Dichlorobenzene	45.2	5	50	0	90.4	69.51	130.49	44.2	2.3	30	
Surr: 1,2-Dichloroethane-d4	56.2		50		112	69.51	130.49	56.3		0	
Surr: Toluene-d8	48.9		50		97.8	69.51	130.49	48.4		0	
Surr: 4-Bromofluorobenzene	49.5		50		99.0	69.51	130.49	49.9		0	

Sample ID **1706146-05AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	49.7	10	50	0	99.5	25.51	146.49				
Vinyl chloride	39	5	50	0	78.1	45.51	142.49				
Chloroethane	56.1	5	50	0	112	24.51	164.49				
Bromomethane	35.5	10	50	0	71.0	9.51	172.49				
Trichlorofluoromethane	51	5	50	0	102	31.51	164.49				
Acetone	913	50	1000	0	91.3	9.51	188.49				

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

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

QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	40.3	5	50	0	80.7	61.51	133.49				
Dichloromethane	43.8	10	50	0	87.6	68.51	130.49				
trans-1,2-Dichloroethene	43.8	5	50	0	87.6	66.51	131.49				
1,1-Dichloroethane	47.2	5	50	0	94.4	66.51	130.49				
cis-1,2-Dichloroethene	40.9	5	50	0	81.9	69.51	130.49				
Chloroform	45.6	5	50	0	91.2	68.51	130.49				
1,2-Dichloroethane	52.1	5	50	0	104	63.51	139.49				
1,1,1-Trichloroethane	50.8	5	50	0	102	64.51	139.49				
Carbon tetrachloride	46.7	5	50	0	93.5	55.51	146.49				
Benzene	46.4	2.5	50	0	92.8	66.51	134.49				
1,2-Dichloropropane	51.6	5	50	0	103	68.51	134.49				
Trichloroethene	40	5	50	0	79.9	67.51	138.49				
Bromodichloromethane	44.7	5	50	0	89.4	57.51	147.49				
cis-1,3-Dichloropropene	38.5	5	50	0	77.1	60.51	130.49				
trans-1,3-Dichloropropene	40.1	5	50	0	80.3	61.51	131.49				
1,1,2-Trichloroethane	44	5	50	0	88.0	69.51	131.49				
Toluene	45.3	2.5	50	0	90.6	37.51	130.49				
Dibromochloromethane	44	5	50	0	87.9	48.51	147.49				
Tetrachloroethene	59.7	5	50	0	79.9	62.51	134.49				
Chlorobenzene	42.3	5	50	0	84.5	69.51	130.49				
Ethylbenzene	46.8	2.5	50	0	93.5	69.51	130.49				
m,p-Xylene	44.2	2.5	50	0	88.4	64.51	139.49				
Bromoform	42.8	5	50	0	85.7	59.51	144.49				

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

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

QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	39.4	2.5	50	0	78.7	68.51	130.49				
1,1,2,2-Tetrachloroethane	43.2	5	50	0	86.4	66.51	134.49				
1,3-Dichlorobenzene	45.9	5	50	0	91.8	69.51	130.49				
1,4-Dichlorobenzene	45.4	5	50	0	90.8	69.51	130.49				
1,2-Dichlorobenzene	44.2	5	50	0	88.4	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	56.3		50		113	69.51	130.49				
Surr: Toluene-d8	48.4		50		96.7	69.51	130.49				
Surr: 4-Bromofluorobenzene	49.9		50		99.8	69.51	130.49				

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

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Definition Only

WO#: **1706148**

Date:

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.

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706148
Report Due By: 29-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: HA-Chand

Date Received: 15-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	METALS_T_200_8	VOC_W					Sample Remarks
PES1706148-01	HA-Chan-To	AQ	6/13/2017 6:10:00 PM	5	0	10	B - Cl	C - Cr,Fe,Mn	A - 8260_Cs					

Comments:

	Signature	Print Name	Company	Date/Time
Logged in by:	Elisaibet Hernandez	Elisaibet Hernandez	Alpha Analytical, Inc.	06/15/17 11:42

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

CHAIN OF CUSTODY

2858

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044
Fax: 775-355-0406

Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Page # 1 of 1

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: HA-Chand
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Chloride	Metals (Cr, Fe, Mn)								Remarks
1810	6/13/17	AQ	PES1706148-01	HA-Chan-TØ	STD	3V, 2P	X	X	X	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 445.0636 (c) (2).

Sampled By: CL

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature] / PRIMA	6/14/17	1530	FED EX		—
			Elizabet Hernandez	06/15/17	11:42

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

07/16

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

July 28, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: HA Chan

Order No.: PES1707079

Dear Cindy Schreier:

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,

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-01
Matrix: AQUEOUS
Client Sample ID HA Chan Con-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	650	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	ND	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
Vinyl chloride	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Bromomethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Acetone	ND	2,000		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethene	390	100		µg/L	7/18/2017	VOCs by EPA 8260B
Dichloromethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroform	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Benzene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Trichloroethene	7,300	100		µg/L	7/18/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Toluene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Ethylbenzene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
m,p-Xylene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
Bromoform	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
o-Xylene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	92	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: Toluene-d8	110	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	7/18/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-02
Matrix: AQUEOUS
Client Sample ID HA Chan AP-pH LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	ND	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	800		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	2,900	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	102	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-03
Matrix: AQUEOUS
Client Sample ID HA Chan AP-pH HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	680	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	0.019	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	20	10		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	102	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	99	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-04
Matrix: AQUEOUS
Client Sample ID HA Chan AP-Fe-LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	660	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	0.30	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	140	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	1,600		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	6,000	80		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	120	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	103	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-05
Matrix: AQUEOUS
Client Sample ID HA Chan AP-Fe-HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	660	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	3.1	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	110	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	35	20		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	100		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	820	20		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	250	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	12	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	40	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	9.7	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	76	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	97	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-06
Matrix: AQUEOUS
Client Sample ID HA Chan KMnO4 LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	650	500		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	71	0.10		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	3.1	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	2.5	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	1.9	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	2.0	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	106	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	89	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Some Reporting Limits were increased due to sample foaming.

Alpha Analytical, Inc.

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Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-07
Matrix: AQUEOUS
Client Sample ID HA Chan KMnO4 HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	290	0.010		mg/L	7/26/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Bromomethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Acetone	ND	20		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Dichloromethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethane	3.0	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroform	2.3	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloroethane	1.7	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	1.8	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	91	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: Toluene-d8	77	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	98	70-130		%Rec	7/18/2017	VOCs by EPA 8260B

NOTES:
Some Reporting Limits were increased due to sample foaming.

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TEL: (775) 355-1044 FAX: (775) 355-0406
Website: www.alpha-analytical.com

QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **300_0_W**

Sample ID:	**MB-1743**	SampType:	**MBLK**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**PBW**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32033**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID:	**LCSD-1743**	SampType:	**LCSD**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**LCSS02**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32035**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.7	0.5	50	0	99.4	89.51	110.49	49.7	0.021	15	

Sample ID:	**LCS-1743**	SampType:	**LCS**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**LCSW**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32034**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.7	0.5	50	0	99.4	89.51	110.49				

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#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **METALS_T_200_8**

Sample ID: **MB-1764** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **PBW** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31819**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID: **LCS-1764** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **LCSW** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31821**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.8	0.01	2.5	0	112	84.51	115.49				
Iron (Fe)	52.9	0.6	50	0	106	84.51	115.49				

Sample ID: **1707151-03AMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **BatchQC** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31823**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.9	0.01	2.5	0	116	69.51	130.49	2.79	3.7	20	
Iron (Fe)	57.7	0.6	50	0	115	69.51	130.49	56.8	1.7	20	

Sample ID: **1707151-03AMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **BatchQC** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31822**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.79	0.01	2.5	0	111	69.51	130.49				
Iron (Fe)	56.8	0.6	50	0	113	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **VOC_W**

Sample ID:	**MB-1710**	SampType:	**MBLK**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**PBW**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30211**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.25									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.25									
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.25									
m,p-Xylene	ND	0.25									
Bromoform	ND	1									
o-Xylene	ND	0.25									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.6		10		95.8	69.51	130.49				
Surr: Toluene-d8	10		10		102	69.51	130.49				
Surr: 4-Bromofluorobenzene	10		10		99.5	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

Alpha Analytical, Inc
255 Glendale Ave, #21
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Website: www.alpha-analytical.com

QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**LCS-1710**	SampType:	**LCS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**LCSW**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30210**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	9.44	2	10	0	94.4	39.51	145.49				
Vinyl chloride	9.78	1	10	0	97.8	69.51	130.49				
Chloroethane	11.4	1	10	0	114	37.51	156.49				
Bromomethane	10.4	2	10	0	104	13.51	162.49				
Trichlorofluoromethane	11.8	1	10	0	118	45.51	154.49				
Acetone	164	10	200	0	82.0	21.51	188.49				
1,1-Dichloroethene	10.3	1	10	0	103	69.51	130.49				
Dichloromethane	8.95	2	10	0	89.5	68.51	130.49				
trans-1,2-Dichloroethene	10.3	1	10	0	103	69.51	130.49				
1,1-Dichloroethane	9.89	1	10	0	98.9	69.51	130.49				
cis-1,2-Dichloroethene	9.14	1	10	0	91.4	69.51	130.49				
Chloroform	9.62	1	10	0	96.2	69.51	130.49				
1,2-Dichloroethane	9.37	1	10	0	93.7	69.51	133.49				
1,1,1-Trichloroethane	10.3	1	10	0	103	69.51	135.49				
Carbon tetrachloride	9.83	1	10	0	98.3	62.51	143.49				
Benzene	9.24	0.25	10	0	92.4	69.51	130.49				
1,2-Dichloropropane	9.72	1	10	0	97.2	69.51	130.49				
Trichloroethene	10.2	1	10	0	102	67.51	138.49				
Bromodichloromethane	9.12	1	10	0	91.2	57.51	147.49				
cis-1,3-Dichloropropene	9.24	1	10	0	92.4	69.51	130.49				
trans-1,3-Dichloropropene	8.34	1	10	0	83.4	69.51	131.49				
1,1,2-Trichloroethane	9.15	1	10	0	91.5	69.51	130.49				
Toluene	10.7	0.25	10	0	107	69.51	130.49				
Dibromochloromethane	8.6	1	10	0	86.0	48.51	147.49				
Tetrachloroethene	11.2	1	10	0	112	69.51	130.49				
Chlorobenzene	10.1	1	10	0	101	69.51	130.49				
Ethylbenzene	10.7	0.25	10	0	107	69.51	130.49				
m,p-Xylene	10.7	0.25	10	0	106	64.51	139.49				
Bromoform	8.11	1	10	0	81.1	59.51	144.49				
o-Xylene	10.2	0.25	10	0	102	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.12	1	10	0	91.2	69.51	130.49				
1,3-Dichlorobenzene	10.3	1	10	0	103	69.51	130.49				
1,4-Dichlorobenzene	10.4	1	10	0	104	69.51	130.49				
1,2-Dichlorobenzene	9.93	1	10	0	99.3	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.42		10		94.2	69.51	130.49				
Surr: Toluene-d8	10.9		10		109	69.51	130.49				
Surr: 4-Bromofluorobenzene	10.4		10		104	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

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

QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan

TestCode: **VOC_W**

Sample ID:	**1707104-01AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30275**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	50.7	10	50	0	101	25.51	146.49	43.3	16	30	
Vinyl chloride	52.9	5	50	0	106	45.51	142.49	47.3	11	30	
Chloroethane	61.3	5	50	0	123	24.51	164.49	54	13	30	
Bromomethane	62.7	10	50	0	125	9.51	172.49	49.7	23	30	
Trichlorofluoromethane	59.2	5	50	0	118	31.51	164.49	53.7	9.7	30	
Acetone	912	50	1000	0	91.2	9.51	188.49	807	12	30	
1,1-Dichloroethene	54.7	5	50	0	109	61.51	133.49	49.4	10	30	
Dichloromethane	46.3	10	50	0	92.6	68.51	130.49	41.2	12	30	
trans-1,2-Dichloroethene	54.8	5	50	0	110	66.51	131.49	48.1	13	30	
1,1-Dichloroethane	54.1	5	50	0	108	66.51	130.49	47.9	12	30	
cis-1,2-Dichloroethene	49.5	5	50	0	99.0	69.51	130.49	43.4	13	30	
Chloroform	53.5	5	50	0	102	68.51	130.49	47.3	12	30	
1,2-Dichloroethane	49.6	5	50	0	99.2	63.51	139.49	44.8	10	30	
1,1,1-Trichloroethane	56.6	5	50	0	113	64.51	139.49	49.2	14	30	
Carbon tetrachloride	51.7	5	50	0	103	55.51	146.49	45.8	12	30	
Benzene	50.1	1.25	50	0	100	66.51	134.49	44.4	12	30	
1,2-Dichloropropane	50.8	5	50	0	102	68.51	134.49	46.2	9.5	30	
Trichloroethene	54.1	5	50	0	108	67.51	138.49	47.3	13	30	
Bromodichloromethane	49.2	5	50	0	98.4	57.51	147.49	42.7	14	30	
cis-1,3-Dichloropropene	43.3	5	50	0	86.6	60.51	130.49	37.6	14	30	
trans-1,3-Dichloropropene	45.9	5	50	0	91.7	61.51	131.49	40	14	30	
1,1,2-Trichloroethane	49.3	5	50	0	98.6	69.51	131.49	43.5	13	30	
Toluene	53.6	1.25	50	0	107	37.51	130.49	48.3	10	30	
Dibromochloromethane	48.2	5	50	0	96.4	48.51	147.49	41.6	15	30	
Tetrachloroethene	54.4	5	50	0	109	62.51	134.49	49.4	9.6	30	
Chlorobenzene	51.4	5	50	0	103	69.51	130.49	45.5	12	30	
Ethylbenzene	53	1.25	50	0	106	69.51	130.49	47.5	11	30	
m,p-Xylene	52.8	1.25	50	0	106	64.51	139.49	50.7	4.2	30	
Bromoform	46.2	5	50	0	92.4	59.51	144.49	39.1	17	30	
o-Xylene	56.5	1.25	50	0	113	68.51	130.49	48.3	16	30	
1,1,2,2-Tetrachloroethane	48.7	5	50	0	97.4	66.51	134.49	42.9	13	30	
1,3-Dichlorobenzene	53.3	5	50	0	107	69.51	130.49	48	10	30	
1,4-Dichlorobenzene	53.7	5	50	0	107	69.51	130.49	48.6	10	30	
1,2-Dichlorobenzene	52.8	5	50	0	106	69.51	130.49	46.8	12	30	
Surr: 1,2-Dichloroethane-d4	47.3		50		94.7	69.51	130.49	47.1		0	
Surr: Toluene-d8	51.4		50		103	69.51	130.49	50.8		0	
Surr: 4-Bromofluorobenzene	52.9		50		106	69.51	130.49	53.6		0	

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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707104-01AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30274**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	43.3	10	50	0	86.5	25.51	146.49				
Vinyl chloride	47.3	5	50	0	94.6	45.51	142.49				
Chloroethane	54	5	50	0	108	24.51	164.49				
Bromomethane	49.7	10	50	0	99.4	9.51	172.49				
Trichlorofluoromethane	53.7	5	50	0	107	31.51	164.49				
Acetone	807	50	1000	0	80.7	9.51	188.49				
1,1-Dichloroethene	49.4	5	50	0	98.8	61.51	133.49				
Dichloromethane	41.2	10	50	0	82.4	68.51	130.49				
trans-1,2-Dichloroethene	48.1	5	50	0	96.2	66.51	131.49				
1,1-Dichloroethane	47.9	5	50	0	95.9	66.51	130.49				
cis-1,2-Dichloroethene	43.4	5	50	0	86.8	69.51	130.49				
Chloroform	47.3	5	50	0	90.0	68.51	130.49				
1,2-Dichloroethane	44.8	5	50	0	89.5	63.51	139.49				
1,1,1-Trichloroethane	49.2	5	50	0	98.4	64.51	139.49				
Carbon tetrachloride	45.8	5	50	0	91.6	55.51	146.49				
Benzene	44.4	1.25	50	0	88.8	66.51	134.49				
1,2-Dichloropropane	46.2	5	50	0	92.4	68.51	134.49				
Trichloroethene	47.3	5	50	0	94.5	67.51	138.49				
Bromodichloromethane	42.7	5	50	0	85.4	57.51	147.49				
cis-1,3-Dichloropropene	37.6	5	50	0	75.1	60.51	130.49				
trans-1,3-Dichloropropene	40	5	50	0	80.0	61.51	131.49				
1,1,2-Trichloroethane	43.5	5	50	0	87.0	69.51	131.49				
Toluene	48.3	1.25	50	0	96.6	37.51	130.49				
Dibromochloromethane	41.6	5	50	0	83.1	48.51	147.49				
Tetrachloroethene	49.4	5	50	0	98.9	62.51	134.49				
Chlorobenzene	45.5	5	50	0	91.0	69.51	130.49				
Ethylbenzene	47.5	1.25	50	0	95.0	69.51	130.49				
m,p-Xylene	50.7	1.25	50	0	101	64.51	139.49				
Bromoform	39.1	5	50	0	78.3	59.51	144.49				
o-Xylene	48.3	1.25	50	0	96.6	68.51	130.49				
1,1,2,2-Tetrachloroethane	42.9	5	50	0	85.8	66.51	134.49				
1,3-Dichlorobenzene	48	5	50	0	96.1	69.51	130.49				
1,4-Dichlorobenzene	48.6	5	50	0	97.2	69.51	130.49				
1,2-Dichlorobenzene	46.8	5	50	0	93.7	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	47.1		50		94.2	69.51	130.49				
Surr: Toluene-d8	50.8		50		102	69.51	130.49				
Surr: 4-Bromofluorobenzene	53.6		50		107	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

Alpha Analytical, Inc
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QC SUMMARY REPORT

WO#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **VOC_W**

Sample ID:	**MB-1718**	SampType:	**MBLK**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**PBW**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30409**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.25									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.25									
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.25									
m,p-Xylene	ND	0.25									
Bromoform	ND	1									
o-Xylene	ND	0.25									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9		10		90.0	69.51	130.49				
Surr: Toluene-d8	11		10		106	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.9		10		99.3	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**LCS-1718**	SampType:	**LCS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**LCSW**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30408**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	9.27	2	10	0	92.7	39.51	145.49				
Vinyl chloride	9.89	1	10	0	98.9	69.51	130.49				
Chloroethane	11	1	10	0	110	37.51	156.49				
Bromomethane	11.3	2	10	0	113	13.51	162.49				
Trichlorofluoromethane	11.1	1	10	0	111	45.51	154.49				
Acetone	167	10	200	0	83.7	21.51	188.49				
1,1-Dichloroethene	10.2	1	10	0	102	69.51	130.49				
Dichloromethane	8.62	2	10	0	86.2	68.51	130.49				
trans-1,2-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
1,1-Dichloroethane	10.1	1	10	0	101	69.51	130.49				
cis-1,2-Dichloroethene	9.3	1	10	0	93.0	69.51	130.49				
Chloroform	9.45	1	10	0	94.5	69.51	130.49				
1,2-Dichloroethane	9.08	1	10	0	90.8	69.51	133.49				
1,1,1-Trichloroethane	10.2	1	10	0	102	69.51	135.49				
Carbon tetrachloride	9.6	1	10	0	96.0	62.51	143.49				
Benzene	9.31	0.25	10	0	93.1	69.51	130.49				
1,2-Dichloropropane	9.38	1	10	0	93.8	69.51	130.49				
Trichloroethene	10.1	1	10	0	101	67.51	138.49				
Bromodichloromethane	9.03	1	10	0	90.3	57.51	147.49				
cis-1,3-Dichloropropene	9.16	1	10	0	91.6	69.51	130.49				
trans-1,3-Dichloropropene	9.01	1	10	0	90.1	69.51	131.49				
1,1,2-Trichloroethane	9.09	1	10	0	90.9	69.51	130.49				
Toluene	10.1	0.25	10	0	101	69.51	130.49				
Dibromochloromethane	9.17	1	10	0	91.7	48.51	147.49				
Tetrachloroethene	10.8	1	10	0	108	69.51	130.49				
Chlorobenzene	9.64	1	10	0	96.4	69.51	130.49				
Ethylbenzene	9.97	0.25	10	0	99.7	69.51	130.49				
m,p-Xylene	10.1	0.25	10	0	101	64.51	139.49				
Bromoform	8.78	1	10	0	87.8	59.51	144.49				
o-Xylene	9.98	0.25	10	0	99.8	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.03	1	10	0	90.3	69.51	130.49				
1,3-Dichlorobenzene	10.4	1	10	0	104	69.51	130.49				
1,4-Dichlorobenzene	11	1	10	0	110	69.51	130.49				
1,2-Dichlorobenzene	9.82	1	10	0	98.2	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.16		10		91.6	69.51	130.49				
Surr: Toluene-d8	10.3		10		103	69.51	130.49				
Surr: 4-Bromofluorobenzene	11		10		110	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#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707112-01AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/19/2017**	RunNo:	**1226**	SeqNo:	**30432**		
Analysis Date:	**7/19/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	49.8	10	50	0	99.7	25.51	146.49	52.9	6	30	
Vinyl chloride	58	5	50	0	116	45.51	142.49	60	3.4	30	
Chloroethane	68.1	5	50	0	136	24.51	164.49	68	0.16	30	
Bromomethane	30.9	10	50	0	61.9	9.51	172.49	34.6	11	30	
Trichlorofluoromethane	62.2	5	50	0	124	31.51	164.49	60.8	2.3	30	
Acetone	834	50	1000	0	83.4	9.51	188.49	920	9.9	30	
1,1-Dichloroethene	55.4	5	50	0	111	61.51	133.49	56.8	2.4	30	
Dichloromethane	44.9	10	50	0	89.7	68.51	130.49	48.5	7.8	30	
trans-1,2-Dichloroethene	55.2	5	50	0	110	66.51	131.49	56.2	1.8	30	
1,1-Dichloroethane	52.5	5	50	0	105	66.51	130.49	55.3	5.3	30	
cis-1,2-Dichloroethene	47.9	5	50	0	95.9	69.51	130.49	50	4.2	30	
Chloroform	49.3	5	50	0	98.7	68.51	130.49	50.3	1.9	30	
1,2-Dichloroethane	46.2	5	50	0	90.0	63.51	139.49	48.5	4.9	30	
1,1,1-Trichloroethane	54.2	5	50	0	108	64.51	139.49	56	3.3	30	
Carbon tetrachloride	51.8	5	50	0	104	55.51	146.49	51.9	0.096	30	
Benzene	48.7	1.25	50	0	97.4	66.51	134.49	51	4.6	30	
1,2-Dichloropropane	48.5	5	50	0	97.0	68.51	134.49	49.9	2.8	30	
Trichloroethene	54.8	5	50	0	110	67.51	138.49	54.6	0.33	30	
Bromodichloromethane	47.4	5	50	0	94.7	57.51	147.49	49.4	4.2	30	
cis-1,3-Dichloropropene	46.5	5	50	0	93.1	60.51	130.49	44.4	4.7	30	
trans-1,3-Dichloropropene	46.9	5	50	0	93.8	61.51	131.49	47	0.23	30	
1,1,2-Trichloroethane	48.3	5	50	0	96.7	69.51	131.49	51.3	6	30	
Toluene	52.8	1.25	50	0	106	37.51	130.49	56.9	7.4	30	
Dibromochloromethane	45.9	5	50	0	91.8	48.51	147.49	50.8	10	30	
Tetrachloroethene	58.4	5	50	0	117	62.51	134.49	58.6	0.29	30	
Chlorobenzene	50.5	5	50	0	101	69.51	130.49	53.7	6.1	30	
Ethylbenzene	53.9	1.25	50	0	108	69.51	130.49	57.1	5.6	30	
m,p-Xylene	53.2	1.25	50	0	106	64.51	139.49	58.3	9.2	30	
Bromoform	43	5	50	0	86.0	59.51	144.49	47.8	11	30	
o-Xylene	52.2	1.25	50	0	104	68.51	130.49	55.4	5.9	30	
1,1,2,2-Tetrachloroethane	45.8	5	50	0	91.7	66.51	134.49	50.9	11	30	
1,3-Dichlorobenzene	57.9	5	50	0	116	69.51	130.49	55.6	4	30	
1,4-Dichlorobenzene	55.8	5	50	0	112	69.51	130.49	54.5	2.4	30	
1,2-Dichlorobenzene	50.6	5	50	0	101	69.51	130.49	52.5	3.6	30	
Surr: 1,2-Dichloroethane-d4	44.6		50		89.2	69.51	130.49	45.1		0	
Surr: Toluene-d8	51.7		50		103	69.51	130.49	52.2		0	
Surr: 4-Bromofluorobenzene	56		50		112	69.51	130.49	52.9		0	

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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Sparks, Nevada 89431
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QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707112-01AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30431**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	52.9	10	50	0	106	25.51	146.49				
Vinyl chloride	60	5	50	0	120	45.51	142.49				
Chloroethane	68	5	50	0	136	24.51	164.49				
Bromomethane	34.6	10	50	0	69.3	9.51	172.49				
Trichlorofluoromethane	60.8	5	50	0	122	31.51	164.49				
Acetone	920	50	1000	0	92.0	9.51	188.49				
1,1-Dichloroethene	56.8	5	50	0	114	61.51	133.49				
Dichloromethane	48.5	10	50	0	97.0	68.51	130.49				
trans-1,2-Dichloroethene	56.2	5	50	0	112	66.51	131.49				
1,1-Dichloroethane	55.3	5	50	0	111	66.51	130.49				
cis-1,2-Dichloroethene	50	5	50	0	100	69.51	130.49				
Chloroform	50.3	5	50	0	101	68.51	130.49				
1,2-Dichloroethane	48.5	5	50	0	94.6	63.51	139.49				
1,1,1-Trichloroethane	56	5	50	0	112	64.51	139.49				
Carbon tetrachloride	51.9	5	50	0	104	55.51	146.49				
Benzene	51	1.25	50	0	102	66.51	134.49				
1,2-Dichloropropane	49.9	5	50	0	99.8	68.51	134.49				
Trichloroethene	54.6	5	50	0	109	67.51	138.49				
Bromodichloromethane	49.4	5	50	0	98.8	57.51	147.49				
cis-1,3-Dichloropropene	44.4	5	50	0	88.8	60.51	130.49				
trans-1,3-Dichloropropene	47	5	50	0	94.0	61.51	131.49				
1,1,2-Trichloroethane	51.3	5	50	0	103	69.51	131.49				
Toluene	56.9	1.25	50	0	114	37.51	130.49				
Dibromochloromethane	50.8	5	50	0	102	48.51	147.49				
Tetrachloroethene	58.6	5	50	0	117	62.51	134.49				
Chlorobenzene	53.7	5	50	0	107	69.51	130.49				
Ethylbenzene	57.1	1.25	50	0	114	69.51	130.49				
m,p-Xylene	58.3	1.25	50	0	117	64.51	139.49				
Bromoform	47.8	5	50	0	95.6	59.51	144.49				
o-Xylene	55.4	1.25	50	0	111	68.51	130.49				
1,1,2,2-Tetrachloroethane	50.9	5	50	0	102	66.51	134.49				
1,3-Dichlorobenzene	55.6	5	50	0	111	69.51	130.49				
1,4-Dichlorobenzene	54.5	5	50	0	109	69.51	130.49				
1,2-Dichlorobenzene	52.5	5	50	0	105	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	45.1		50		90.2	69.51	130.49				
Surr: Toluene-d8	52.2		50		104	69.51	130.49				
Surr: 4-Bromofluorobenzene	52.9		50		106	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

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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Sparks, Nevada 89431
TEL: (775) 355-1044 FAX: (775) 355-0406
Website: www.alpha-analytical.com

Definition Only

WO#: **1707079**

Date:

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1707079
Report Due By: 26-Jul-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: HA Chan

Date Received: 12-Jul-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	METALS_T_200_8	VOC_W					Sample Remarks
PES1707079-01	HA Chan Con-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-02	HA Chan AP-pH LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-03	HA Chan AP-pH HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-04	HA Chan AP-Fe-LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-05	HA Chan AP-Fe-HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-06	HA Chan KMnO4 LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-07	HA Chan KMnO4 HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					

Comments:

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	7/12/17 1215

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

CHAIN OF CUSTODY

2876

Billing Information:

Company: PRIMA Env
Attn:
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: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 — Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: Elko, NV 89801 — Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 — Phone: 702-281-4848

Page # 1 of 1

Consultant/ Client Info:

Company: PRIMA
Address:
City, State, Zip:

Job and Purchase Order Info:

Job # HA Chan
Job Name:
P.O. #:

Report Attention/Project Manager:

Name: Cindy Schreier
Email Address: data@primaenvironmental.com
Phone #:
Cell #: 916-939-7300

QC Deliverable Info:

EDD Required? Yes / No — EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs-8260	Chloride	~~Chromium~~	Iron	Manganese						Remarks
1130	7/11	AQ	PES1707079-01	HAChan Con B	std				X	X		X	X						
			02	HA Chan AP-pH LD-B					X	X		X	X						
			03	HA Chan AP-pH HD-B					X	X		X	X						
			04	HA Chan AP-Fe-LD-B					X	X		X	X						
			05	HA Chan AP-Fe-HD-B					X	X		X	X						
			06	HA Chan KMnO4 LD-B					X	X		X	X						
			07	HA Chan KMnO4 HD-B					X	X		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 445.0636 (c) (2).

Sampled By:

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
PRIMA	7/11/17	~1630	FEDEX		
				7/12/17	1200

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

07/16

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706B49

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA-Chandler

Project Received: 06/23/2017

Analytical Report reviewed & approved for release on 07/03/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chandler
WorkOrder: 1706B49

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chandler
WorkOrder: 1706B49

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits
b1	Aqueous sample that contains greater than ~1 vol. % sediment
c2	Surrogate recovery outside of the control limits due to matrix interference.

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Received:	6/23/17 9:29	**Extraction Method:**	SW5030B
Date Prepared:	7/3/17	**Analytical Method:**	SW8260B
Project:	HA-Chandler	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
CON-A	**1706B49-001A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	50	100	07/03/2017 10:38

Surrogates	REC (%)	Limits	
Dibromofluoromethane	121	70-130	07/03/2017 10:38

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-pH-LD-A	**1706B49-002A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**590**	50	100	07/03/2017 11:16

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 11:16

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-pH-HD-A	**1706B49-003A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result		RL	DF	Date Analyzed
1,4-Dioxane	ND		0.50	1	07/03/2017 11:53
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	2	S	70-130		07/03/2017 11:53

Analyst(s): HK Analytical Comments: c2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-Fe-LD-A	**1706B49-004A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**220**	25	50	07/03/2017 12:31

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 12:31

Analyst(s): HK

(Cont.)

McCampbell Analytical, Inc.
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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Received:	6/23/17 9:29	**Extraction Method:**	SW5030B
Date Prepared:	7/3/17	**Analytical Method:**	SW8260B
Project:	HA-Chandler	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-Fe-HD-A	**1706B49-005A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**38**	2.5	5	07/03/2017 13:09

Surrogates	REC (%)	Limits	
Dibromofluoromethane	130	70-130	07/03/2017 13:09

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMnO4-LD-A	**1706B49-006A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**870**	50	100	07/03/2017 13:46

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 13:46

Analyst(s): HK Analytical Comments: b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMnO4-HD-A	**1706B49-007A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	50	100	07/03/2017 14:24

Surrogates	REC (%)	Limits	
Dibromofluoromethane	123	70-130	07/03/2017 14:24

Analyst(s): HK Analytical Comments: b1

McCampbell Analytical, Inc.
"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Prepared:	7/1/17	**BatchID:**	141431
Date Analyzed:	7/1/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA-Chandler	**Sample ID:**	MB/LCS/LCSD-141431

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	30.37		25	121	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	8.82	9.45	10	88	95	70-130	6.93	20
Surrogate Recovery								
Dibromofluoromethane	30.1	30.4	25	120	122	70-130	1.05	20

McCampbell Analytical, Inc.

1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706B49 **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA-Chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/23/2017
Date Logged: 06/23/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706B49-001	CON-A	Water	6/20/2017 15:00	☐	A											
1706B49-002	Ap-pH-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-003	Ap-pH-HD-A	Water	6/20/2017 15:00	☐	A											
1706B49-004	Ap-Fe-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-005	Ap-Fe-HD-A	Water	6/20/2017 15:00	☐	A											
1706B49-006	KMnO4-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-007	KMnO4-HD-A	Water	6/20/2017 15:00	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA-Chandler
Comments:

Work Order: 1706B49
QC Level: LEVEL 2
Date Logged: 6/23/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706B49-001A	CON-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-002A	Ap-pH-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-003A	Ap-pH-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-004A	Ap-Fe-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-005A	Ap-Fe-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-006A	KMnO4-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	1%+	☐	
1706B49-007A	KMnO4-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	1%+	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706B49

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #			
J-Flag / MDL		ESL		Cleanup Approved					Bottle Order #			
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)			EQuIS		

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Bill To:

Tele:

Project Name: HA-Chandler
Project #:
Project Location:
PO #
Sampler Signature: CL

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
Con-A	6/20/17	1500	2	AQ	HCl																X			
Ap-pH-LD-A	↓	↓	↓	↓	↓																X			
Ap-pH-HD-A																					X			
Ap-Fe-LD-A																					X			
Ap-Fe-HD-A																					X			
KMnO4-LD-A																					X			
KMnO4-HD-A																					X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Catherine Ryan / PRIMA	6/20/17	1800	FED EX	—	—
FedEx				6/23/17	0929

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 21.4 °C wet Initials

Page ___ of ___

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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/23/2017 09:29**
Project Name:	**HA-Chandler**	Date Logged:	**6/23/2017**
		Received by:	Jena Alfaro
WorkOrder №:	**1706B49** Matrix: Water	Logged by:	Jena Alfaro
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 21.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

June 14, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
Ste. 300
El Dorado Hills, CA 95762

RE: Project: HA-Chand
Pace Project No.: 1289440

Dear Cindy Schreier:
Enclosed are the analytical results for sample(s) received by the laboratory on June 14, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott Forbes

Scott M Forbes
scott.forbes@pacelabs.com
(530) 297-4800
Project Manager

Enclosures

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Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

CERTIFICATIONS

Project:	HA-Chand
Pace Project No.:	1289440

Davis Cerification IDs

2795 Second Street Suite 300 Davis, CA 95618
North Dakota Certification #: R-214
Oregon Certification #: CA300002
Washington Certification #: C926-15a
California Certification #: 08263CA
Minnesota Department of Health Certification #: 006-999-465

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Davis, CA 95618
(530) 297-4800

SAMPLE SUMMARY

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1289440001	**HA-chan-T0**	Water	06/13/17 18:10	06/14/17 10:00

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SAMPLE ANALYTE COUNT

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1289440001	**HA-chan-T0**	EPA 7199	SJ1	1	PASI-DAV

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ANALYTICAL RESULTS

Project: HA-Chand
Pace Project No.: 1289440

Sample: HA-chan-T0 **Lab ID: 1289440001** Collected: 06/13/17 18:10 Received: 06/14/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7199 Chromium, Hexavalent	Analytical Method: EPA 7199							
Chromium, Hexavalent	**4.6**	ug/L	1.0	1		06/14/17 12:47	18540-29-9	M1

REPORT OF LABORATORY ANALYSIS

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2795 Second Street - Suite 300
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QUALITY CONTROL DATA

Project: HA-Chand
Pace Project No.: 1289440

QC Batch: 116460
QC Batch Method: EPA 7199
Analysis Method: EPA 7199
Analysis Description: 7199 Chromium, Hexavalent
Associated Lab Samples: 1289440001

METHOD BLANK: 459804
Matrix: Water
Associated Lab Samples: 1289440001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	1.0	06/14/17 12:34	

LABORATORY CONTROL SAMPLE: 459805

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 459806 459807

Parameter	Units	1289440001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	ug/L	4.6	5	5	10.0	10.4	107	116	90-110	4	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HA-Chand
Pace Project No.: 1289440

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DAV	Pace Analytical Services - Davis

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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(530) 297-4800

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1289440001	**HA-chan-T0**	EPA 7199	116460		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Phone: Fax:
Requested Due Date/TAT: STD

Project Name: HA-Chand
Project Number:

Section C
Invoice Information:
Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

Page: 1 of 1

REGULATORY AGENCY
NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER
Site Location STATE:

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): Y

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Cr(VI)-7199	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	HA-Chan-T8	WT		~~6/15~~ 6/13/17	1810	Room	1	X								X		001

1289440

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Catherine Ligon / PRIMA	6/13/17	1330	FED EX						
				→ Pace	6/14/17	1000	1.9	Y	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Catherine Ligon
SIGNATURE of SAMPLER: Catherine Ligon
DATE Signed (MM/DD/YY): 6/13/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: **F-DAV-C-002-rev.02**	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Prima

Project #: WO#: 1289440 (1289440)

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other: _____

Tracking Number: 80999440 4059

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 **Type of Ice:** ☑ Wet ☐ Blue ☐ Dry Ice ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 1.2 **Cooler Temp Corrected(°C):** 1.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.7 **Date and Initials of Person Examining Contents:** DJ 06/14/17

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1. No time indicated on client
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2. label, SR will login at 1810
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3. per COC
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☐ Yes	☑ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Scott Turner **Date:** 6/14/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

June 28, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
Ste. 300
El Dorado Hills, CA 95762

RE: Project: HA-Chander
Pace Project No.: 1290006

Dear Cindy Schreier:
Enclosed are the analytical results for sample(s) received by the laboratory on June 21, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott Forbes

Scott M Forbes
scott.forbes@pacelabs.com
(530) 297-4800
Project Manager

Enclosures

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Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

SAMPLE SUMMARY

Project: HA-Chander
Pace Project No.: 1290006

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1290006001	**Con-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006002	**Ap-pH-LD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006003	**Ap-pH-HD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006004	**Ap-Fe-LD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006005	**Ap-Fe-HD-A**	Water	06/20/17 15:00	06/21/17 09:45

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Section B Required Project Information:

er No.: Project: HA-Chandler

er:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER
UST | RCRA | OTHER

Site Location STATE:

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Cr(VI) 7199	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 1290006
	Con-A	WT		6/20/17	1500	Room	1	X									X		001
	Ap-pH-LD-A	↓		↓	↓	↓	1	X									X		002
	Ap-pH-HD-A	↓		↓	↓	↓	1	X									X		003
	Ap-Fe-LD-A	↓		↓	↓	↓	1	X									X		004
	Ap-Fe-HD-A	↓		↓	↓	↓	1	X									X		005

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Catherine Ligon / PRIMA	6/20/17	1500	FED EX / Pace	062117	0945	2.9	Y	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Catherine Ligon

SIGNATURE of SAMPLER: Catherine Ligon

DATE Signed (MM/DD/YY): 6/20/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: **F-DAV-C-002-rev.02**	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Prima

Project #: WO#: 1290006 (1290006)

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other:

Tracking Number: 8099 9440 4060

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 **Type of Ice:** ☐ Wet ☐ Blue ☐ Dry Ice ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 2.2 **Cooler Temp Corrected(°C):** 2.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.7 **Date and Initials of Person Examining Contents:** DJD062117

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out? DJD062117	☑ Yes	☑ No	☐ N/A	2. No TAT indicated
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☑ Yes	☐ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT DJD062117	☑ Yes	☑ No	☐ N/A	12. No times indicated on client labels, SR will login per COC times
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Scott Jones **Date:** 8/21/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

June 28, 2017

CLS Work Order #: 17F0995
COC #:

Scott Forbes
Pace Analytical Services, Inc. - Davis
2795 Second St. Suite 300
Davis, CA 95616

Project Name: HA-Chander

Enclosed are the results of analyses for samples received by the laboratory on 06/23/17 11:47. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

Chain of Custody

Pace Analytical
www.pacelabs.com

17F0995

Workorder: 1290006 **Workorder Name:** HA-Chander **Results Requested By:** 6/28/2017

Report / Invoice To

Scott M Forbes
Pace Analytical Davis
2795 Second Street
Suite 300
Davis, CA 95618
Phone (530) 297-4800
Email: scott.forbes@pacelabs.com

CLS

Subcontract To

P.O. 1290006

State of Sample Origin: CA

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: Hexavalent Chromium												LAB USE ONLY
1	Con-A	6/20/2017 15:00	1290006001	Water	1						X												
2	Ap-pH-LD-A	6/20/2017 15:00	1290006002	Water	1						X												
3	Ap-pH-HD-A	6/20/2017 15:00	1290006003	Water	1						X												
4	Ap-Fe-LD-A	6/20/2017 15:00	1290006004	Water	1						X												
5	Ap-Fe-HD-A	6/20/2017 15:00	1290006005	Water	1						X												

Transfers	Released By	Date/Time	Received By	Date/Time
1	Pace	062316 1146	[illegible]	6/23/17 1147 0.6
2				
3				

Comments

Cooler Temperature on Receipt _____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

10 mg/L Persulfate in Samples labeled "HD"

CLS LABS
SAMPLE RECEIVING EXCEPTION REPORTS

CLS Labs Job # 17F0995 - PINK.

Problem discovered by: GG. **Date:** 6/23/17.

Nature of problem

RECEIVED SAMPLES OUT OF HOLD FOR.
Cr 6 - NO PRESERVATION

Client contacted? Yes _____ **No** _____ **Spoke With:** _____

By whom: _____ **Date:** / / **Time:** _____ **HRS**

Client instructions:

Resolution of problem:

LOGGED IN REGARDLESS OF HOLD
TIME

H:\WillOrellana\SampleException.Doc

CALIFORNIA LABORATORY SERVICES

 06/28/17 13:49

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Con-A 1290006001 (17F0995-01) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.5**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-pH-LD-A 1290006002 (17F0995-02) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.2**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-pH-HD-A 1290006003 (17F0995-03) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**48**	10	µg/L	10	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-Fe-LD-A 1290006004 (17F0995-04) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**3.7**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-Fe-HD-A 1290006005 (17F0995-05) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.7**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1704684 - General Prep										
Blank (1704684-BLK1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	ND	1.0	µg/L							
LCS (1704684-BS1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	4.79	1.0	µg/L	5.00		96	80-120			
LCS Dup (1704684-BSD1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	5.50	1.0	µg/L	5.00		110	80-120	14	20	
Matrix Spike (1704684-MS1)		**Source: 17F0815-01**		Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	4.29	1.0	µg/L	5.00	ND	86	80-120			
Matrix Spike Dup (1704684-MSD1)		**Source: 17F0815-01**		Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	ND	1.0	µg/L	5.00	ND		80-120		20	QM-7

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
HT-1	The sample was received outside of the EPA recommended holding time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

McCampbell Analytical, Inc.

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Analytical Report

WorkOrder: 1706178

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A- chandler

Project Received: 06/05/2017

Analytical Report reviewed & approved for release on 06/13/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A- chandler
WorkOrder: 1706178

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW3060A
Date Prepared:	6/8/17	**Analytical Method:**	SW7199
Project:	H&A- chandler	**Unit:**	mg/Kg

Hexavalent chromium by Alkaline Digestion and IC Analysis

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**IC2**	**140158**

Analytes	Result	RL	DF	Date Analyzed
Hexavalent chromium	ND	4.0	1	06/08/2017 19:17

Analyst(s): DP

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW9060A
Date Prepared:	6/12/17	**Analytical Method:**	SW9060A
Project:	H&A- chandler	**Unit:**	mg/kg

Total Organic Carbon (TOC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**WC_CNS**	**140310**

Analytes	Result	RL	DF	Date Analyzed
TOC	ND	200	1	06/12/2017 19:43

Analyst(s): RB

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/8/17	**BatchID:**	140158
Date Analyzed:	6/8/17 - 6/9/17	**Extraction Method:**	SW3060A
Instrument:	IC2	**Analytical Method:**	SW7199
Matrix:	Soil	**Unit:**	mg/Kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS-140158 1706188-001AMS/MSD

QC Summary Report for SW7199 (Hexavalent chromium)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Hexavalent chromium	ND	206	4.0	200	-	103	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Hexavalent chromium	196	193	200	ND	98	97	70-130	1.34	20

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/12/17	**BatchID:**	140310
Date Analyzed:	6/12/17	**Extraction Method:**	SW9060A
Instrument:	WC_CNS	**Analytical Method:**	SW9060A
Matrix:	Soil	**Unit:**	mg/kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS-140310 1706273-001AMS/MSD

QC Summary Report for SW9060A

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TOC	ND	8140	200	8200	-	99	80-120

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TOC	NR	NR		32000	NR	NR	-	NR	-

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706178 **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A- chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/05/2017
Date Logged: 06/05/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706178-001	HA-ch-Su	Soil	5/31/2017 15:30	☐	A	A										

Test Legend:

1	7199_TTLC_S	2	cnsTOC_S	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Kena Ponce

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: H&A- chandler
Comments: 14Dioxane added 6/8/17 RUSH TAT

Work Order: 1706178
QC Level: LEVEL 2
Date Logged: 6/5/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706178-001A	HA-ch-Su	Soil	SW9060A (TOC)	1	8OZ GJ	☐	5/31/2017 15:30	5 days		☐	
			SW8260B (1,4-Dioxane) (SIM Mode)			☐		2 days		☐	
			SW7199 (Hexavalent chromium)			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706178

McCAMPBELL ANALYTICAL, INC.

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PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD X | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Bill To:
Tele:
Project Name: H&A-Chandler
Project #:
Project Location:
PO #
Sampler Signature: Cathy Lin

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	TOC - 9060	Cr(VI) - 7199		
HA-ch-S0	5/31/17	1530	1	Soil	—																X	X		

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Cathy Lynn / PRIMA	5/31/17	1730	FED EX		
FED EX			[signature]	6/5/17	0928

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 20.8 °C Initials KP

Page ___ of ___

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Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/5/2017 09:28**
Project Name:	**H&A- chandler**	Date Logged:	**6/5/2017**
		Received by:	
WorkOrder №:	**1706178** Matrix:	Logged by:	Kena Ponce
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 20.8°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706178 A

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A- chandler

Project Received: 06/05/2017

Analytical Report reviewed & approved for release on 06/13/2017 by:

Angela Rydelius,
Laboratory Manager

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McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A- chandler
WorkOrder: 1706178

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW5030B
Date Prepared:	6/9/17	**Analytical Method:**	SW8260B
Project:	H&A- chandler	**Unit:**	mg/kg

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**GC38**	**140263**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	ND	0.020	1	06/13/2017 11:43

Surrogates	REC (%)	Limits	
Dibromofluoromethane	101	70-130	06/13/2017 11:43
Benzene-d6	95	60-140	06/13/2017 11:43

Analyst(s): HK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/9/17	**BatchID:**	140263
Date Analyzed:	6/12/17 - 6/13/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS/LCSD-140263 1706178-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.020	-	-	-
Surrogate Recovery					
Dibromofluoromethane	0.1246		0.12	100	70-130
Benzene-d6	0.1197		0.10	120	60-140

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	0.0366	0.0371	0.050	73	74	70-130	1.28	20
Surrogate Recovery								
Dibromofluoromethane	0.127	0.125	0.12	101	100	70-130	1.16	20
Benzene-d6	0.114	0.106	0.10	114	106	60-140	7.16	20

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,4-Dioxane	0.0376	0.0376	0.050	ND	75	75	70-130	0	20
Surrogate Recovery									
Dibromofluoromethane	0.124	0.125	0.12		99	100	70-130	1.14	20
Benzene-d6	0.114	0.117	0.10		114	117	60-140	2.32	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706178 A **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A- chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 2 days;

Date Received: 06/05/2017
Date Logged: 06/05/2017
Date Add-On: 06/08/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706178-001	HA-ch-Su	Soil	5/31/2017 15:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_S	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Kena Ponce

Add-On Prepared By: Jena Alfaro

Comments: 14Dioxane added 6/8/17 RUSH TAT

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email data@primaenvironmental.com

Project: H&A- chandler
Comments: 14Dioxane added 6/8/17 RUSH TAT

Work Order: 1706178
QC Level: LEVEL 2
Date Logged: 6/5/2017
Date Add-On: 6/8/2017

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706178-001A	HA-ch-Su	Soil	SW8260B (1,4-Dioxane) (SIM Mode)	1	8OZ GJ	5/31/2017 15:30	2 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706178

McCAMPBELL ANALYTICAL, INC.

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PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #	
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Bill To:

Tele:

Project Name: H&A-Chandler Project #:

Project Location: PO #

Sampler Signature: Cathe Lin

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	TOC - 9060	Cr(VI) - 7199	14 Dioxane 8260 6/8/17 RUSH	
HA-ch-SU	5/31/17	1530	1	Soil	—																X	X	X	

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Catherine Lynn / PRIMA	5/31/17	1730	FED EX	—	—
FED EX	—	—	[signature]	6/5/17	0928

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 20.8 °C Initials KF

Page ___ of ___

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706231

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA-Chan

Project Received: 06/06/2017

Analytical Report reviewed & approved for release on 06/08/2017 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chan
WorkOrder: 1706231

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706231
Date Received:	6/6/17 9:48	**Extraction Method:**	SW5030B
Date Prepared:	6/8/17	**Analytical Method:**	SW8260B
Project:	HA-Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HAChan- Unt GW	**1706231-001A**	**Water**	**06/05/2017 17:30**	**GC38**	**140155**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**1300**	10	20	06/08/2017 16:21

Surrogates	REC (%)	Limits	
Dibromofluoromethane	114	70-130	06/08/2017 16:21

Analyst(s): AK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706231
Date Prepared:	6/8/17	**BatchID:**	140155
Date Analyzed:	6/8/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA-Chan	**Sample ID:**	MB/LCS/LCSD-140155

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	28.69		25	115	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	10.7	11.3	10	107	113	70-130	4.96	20
Surrogate Recovery								
Dibromofluoromethane	29.2	29.2	25	117	117	70-130	0	20

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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706231 **ClientCode: PEM** **QuoteID: 5998**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA-Chan

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 2 days;
Date Received: 06/06/2017
Date Logged: 06/06/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706231-001	HAChan- Unt GW	Water	6/5/2017 17:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Tina Perez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA-Chan
Comments:

Work Order: 1706231
QC Level:
Date Logged: 6/6/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ■ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706231-001A	HAChan- Unt GW	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/5/2017 17:30	2 days	Trace	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706231

6

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www.mccampbell.com main@mccampbell.com

RUSH

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush	X	3 Day Rush		STD		Quote #	
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Report To: Cindy Schreier Bill To: PRIMA
Company: PRIMA
Email: data@primaenvironmental.com
Alt Email: Tele: 916-939-7300
Project Name: HA-Chan Project #:
Project Location: PO #
Sampler Signature: CS

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
+ HAChan-Unt GW	6-5-17	1730	2	AQ	HCl																X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
CS PRIMA	6/5/17	~1820	FedEx		
			[signature]	6/6/17	14:51

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 10.3 °C Initials TP

Page ___ of ___

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received:	**6/6/2017 09:48**
Project Name:	**HA-Chan**	Date Logged:	**6/6/2017**
		Received by:	Tina Perez
WorkOrder №:	**1706231** Matrix: Water	Logged by:	Tina Perez
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 10.3°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706713

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A-Channel

Project Received: 06/15/2017

Analytical Report reviewed & approved for release on 06/21/2017 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A-Channel
WorkOrder: 1706713

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706713
Date Received:	6/15/17 9:56	**Extraction Method:**	SW5030B
Date Prepared:	6/19/17	**Analytical Method:**	SW8260B
Project:	H&A-Channel	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-Chan-T0	**1706713-001A**	**Water**	**06/13/2017 18:10**	**GC38**	**140742**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**1000**	50	100	06/19/2017 17:05

Surrogates	REC (%)	Limits	
Dibromofluoromethane	108	70-130	06/19/2017 17:05

Analyst(s): HK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706713
Date Prepared:	6/19/17	**BatchID:**	140742
Date Analyzed:	6/19/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	H&A-Channel	**Sample ID:**	MB/LCS/LCSD-140742

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	26.37		25	105	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	9.18	9.64	10	92	96	70-130	4.89	20
Surrogate Recovery								
Dibromofluoromethane	27.0	26.8	25	108	107	70-130	0.733	20

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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706713 **ClientCode: PEM** **QuoteID: 6157**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A-Channel

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/15/2017
Date Logged: 06/15/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706713-001	HA-Chan-T0	Water	6/13/2017 18:10	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: H&A-Channel
Comments:

Work Order: 1706713
QC Level:
Date Logged: 6/15/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ■ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706713-001A	HA-Chan-T0	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/13/2017 18:10	5 days	Present	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706713

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PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #			
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #			
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS		

Bill To:

Tele:

Project Name: H&A - chand Project #:

Project Location: PO #

Sampler Signature:

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
HA-Chan-TØ	6/13/17	1810	2	AQ	HCl																X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
[signature] / PRIMA	6/14/17	1500	FED EX		
Fedex 8694 0808 1228			[signature]	6/15/17	956

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 6.2 °C Initials [initials]

Page ___ of ___

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Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/15/2017 09:56**
Project Name:	**H&A-Channel**	Date Logged:	**6/15/2017**
		Received by:	Jena Alfaro
WorkOrder №:	**1706713** Matrix: Water	Logged by:	Jena Alfaro
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 6.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1707379

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA Chan

Project Received: 07/12/2017

Analytical Report reviewed & approved for release on 07/19/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA Chan
WorkOrder: 1707379

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Received:	7/12/17 9:41	**Extraction Method:**	SW5030B
Date Prepared:	7/19/17	**Analytical Method:**	SW8260B
Project:	HA Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Con B	**1707379-001A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**880**	10	20	07/19/2017 13:00

Surrogates	REC (%)	Limits	
Dibromofluoromethane	108	70-130	07/19/2017 13:00

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-PH LD-B	**1707379-002A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**300**	2.5	5	07/19/2017 13:38

Surrogates	REC (%)	Limits	
Dibromofluoromethane	110	70-130	07/19/2017 13:38

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-PH HD-B	**1707379-003A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	ND	0.50	1	07/19/2017 00:21

Surrogates	REC (%)	Limits	
Dibromofluoromethane	116	70-130	07/19/2017 00:21

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-Fe LD-B	**1707379-004A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**440**	10	20	07/19/2017 00:59

Surrogates	REC (%)	Limits	
Dibromofluoromethane	111	70-130	07/19/2017 00:59

Analyst(s): JEM

(Cont.)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Received:	7/12/17 9:41	**Extraction Method:**	SW5030B
Date Prepared:	7/19/17	**Analytical Method:**	SW8260B
Project:	HA Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-Fe HD-B	**1707379-005A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**7.2**	0.50	1	07/19/2017 01:37

Surrogates	REC (%)	Limits	
Dibromofluoromethane	126	70-130	07/19/2017 01:37

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMn04-LD-B	**1707379-006A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	10	20	07/19/2017 14:16

Surrogates	REC (%)	Limits	
Dibromofluoromethane	107	70-130	07/19/2017 14:16

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMn04-HD-B	**1707379-007A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**570**	10	20	07/19/2017 14:54

Surrogates	REC (%)	Limits	
Dibromofluoromethane	107	70-130	07/19/2017 14:54

Analyst(s): JEM

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Prepared:	7/18/17	**BatchID:**	142217
Date Analyzed:	7/18/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA Chan	**Sample ID:**	MB/LCS/LCSD-142217

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	27.93		25	112	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	9.38	9.80	10	94	98	70-130	4.33	20
Surrogate Recovery								
Dibromofluoromethane	28.0	28.2	25	112	113	70-130	0.857	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1707379 **ClientCode: PEM** **QuoteID: 5998**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA Chan

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 07/12/2017
Date Logged: 07/12/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1707379-001	Con B	Water	7/11/2017 11:30	☐	A											
1707379-002	AP-PH LD-B	Water	7/11/2017 11:30	☐	A											
1707379-003	AP-PH HD-B	Water	7/11/2017 11:30	☐	A											
1707379-004	AP-Fe LD-B	Water	7/11/2017 11:30	☐	A											
1707379-005	AP-Fe HD-B	Water	7/11/2017 11:30	☐	A											
1707379-006	KMn04-LD-B	Water	7/11/2017 11:30	☐	A											
1707379-007	KMn04-HD-B	Water	7/11/2017 11:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA Chan
Comments:

Work Order: 1707379
QC Level:
Date Logged: 7/12/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1707379-001A	Con B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-002A	AP-PH LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-003A	AP-PH HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-004A	AP-Fe LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-005A	AP-Fe HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	None	☐	
1707379-006A	KMn04-LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-007A	KMn04-HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

1707379 MAI Work Order # ~~1707391~~

6

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Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Report To: Cindy Schreir Bill To: PRIMA Env
Company: PRIMA Env
Email: datacprimaenvironmental.com
Alt Email: Tele: 916-939-7300
Project Name: HA Chan Project #:
Project Location: PO #
Sampler Signature:

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane 8260 SIM			
+ Con B	7/11/17	1130	2	water	HCl																X			
+ AP-pH LD-B			2																		X			
+ AP-pH HD-B			2																		X			
+ AP-Fe LD-B			2																		X			
✓ AP-Fe HD-B			2																		X			
+ ~~AP~~ KMnO4-LD-B			2																		X			
+ KMnO4-HD-B			2																		X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions: Quote 5998

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
~~FedEx~~ PRIMA	7/11/17	~1630	FedEx		
CAS			[illegible]	7/12	0941

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 7.4 °C Initials

WET ICE

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**7/12/2017 09:41**
Project Name:	**HA Chan**	Date Logged:	**7/12/2017**
		Received by:	Agustina Venegas
WorkOrder №:	**1707379** Matrix: Water	Logged by:	Agustina Venegas
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Sample IDs noted by Client on COC?	Yes ☑	No ☐	
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐	
Sampler's name noted on COC?	Yes ☑	No ☐	

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 7.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

PRIMA ENVIRONMENTAL INC.

5070 Robert J. Mathews Parkway, Suite 300
El Dorado Hills, CA 95762
(916) 939-7300; (916) 939-7398 Fax
www.primaenvironmental.com

CHAIN of CUSTODY

Project Manager: BRUCE TRAVERS
Project Name: PLYMOUTH TUBE CHANDLER
Job Number: 128159-003 TASK 9
Sampler Signature:

Phone: 602-760-2461
~~Fax~~ CELL: 480-244-5890
Email: BTRAVERS@HALEYALDRICH.COM
TAT:

SAMPLE ID	Date	Time	Matrix	# Containers	Analysis: TREATABILITY STUDY 8/30/16 PROPOSAL										Comments
PT-6D	8-27-14		S	2	X	X									SOIL FOR TREATABILITY STUDY 8/30/16 PROPOSAL Two 5 gal buckets shipped.

Special Instructions	Relinquished by:		Received by:
SOIL FOR PROPOSAL DATED AUGUST 30, 2016. HALEY & ALDRICH - PLYMOUTH TUBE, CHANDLER	Company HALEY & ALDRICH	Date 5-24-17	Company
	Printed Name Chad Price	Time 14:30	Printed Name
	Signature		Signature
	Relinquished by:		**Received by:**
	Company	Date 5/25/17	Company PRIMA
	Printed Name	Time 0940	Printed Name Catherine Liguori
	Signature		Signature

Matrix key: S - soil/sediment; W - water; OT - other

PRIMA ENVIRONMENTAL INC.
5070 Robert J. Mathews Parkway, Suite 300
El Dorado Hills, CA 95762
(916) 939-7300; (916) 939-7398 Fax
www.primaenvironmental.com

CHAIN of CUSTODY

Project Manager: BRUCE TRAVERS
Project Name: PLYMOUTH TUBE CHANDLER
Job Number: 128159-003 TASK 9
Sampler Signature:

Phone: 602-760-2461
CELL ~~Fax~~: 480-244-5890
Email: BTRAVERS@HALEYALDRICH.COM
TAT:

SAMPLE ID	Date	Time	Matrix	# Containers	TREATABILITY STUDY 8/30/16 PROPOSAL										Comments
															in good condition & on ice
LB-7R	5-24-17	10:50	W	20	X	X									20 - 1L BOTTLES OF GROUNDWATER FROM MONITOR WELL LB-7R FOR TREATABILITY STUDY 8/30/16 PROPOSAL
															4 total coolers!

Special Instructions	Relinquished by:		Received by:
GROUNDWATER FOR PROPOSAL DATED AUGUST 30, 2016. HALEY & ALDRICH - PLYMOUTH TUBE, CHANDLER	Company HALEY & ALDRICH	Date 5-24-17	Company ~~Company~~
	Printed Name Chad Price	Time 14:30	Printed Name
	Signature 14:30		Signature
	Relinquished by:		**Received by:**
	Company	Date 5/25/17	Company PRIMA
	Printed Name	Time 0940	Printed Name Catherine Liguori
	Signature		Signature

Matrix key: S - soil/sediment; W - water; OT - other

APPENDIX B

ISCO-1 Drilling and Installation Photographs

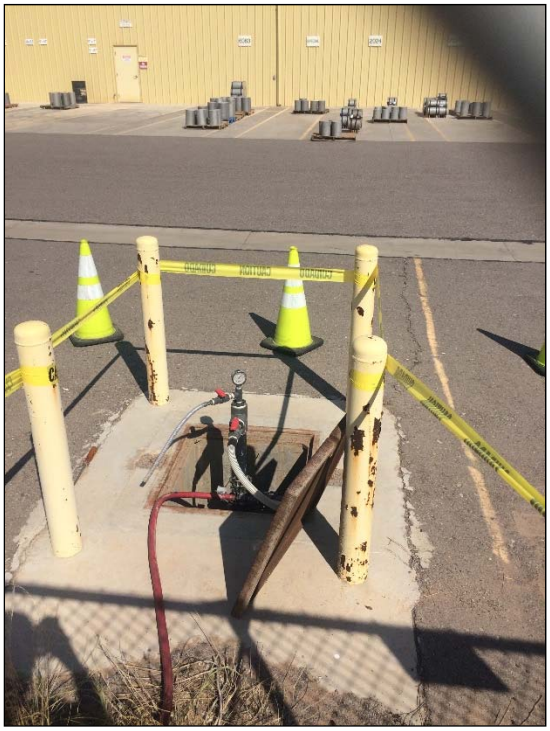
Photograph 1. Drilling of ISCO-1 Injection Well.

Photograph 2. 2-inch PVC Injection Screen.

Photograph 3. ISCO-1 SHALLOW and DEEP Injection Points.

Photograph 4. Sodium Hydroxide (NaOH) Totes.

Photograph 5. ISCO Injection Mixing/Injection System.



Photograph 6. LB-7R ISCO Injection Setup.

Photograph 7. ISCO-1 SHALLOW and DEEP Injection Setup.

Photograph 8. ISCO Injection Mixing Operator.

Photograph 9. ISCO Injection Exclusion Zone.

Photograph 10. Sodium Persulfate Klozur.

APPENDIX C

ISCO-1 Field Logs

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-3	Initial Depth to Water:	CP ~~65.33~~ 64.95
Sample ID:	PT-3-90- 10172017	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:	PT-3-90-10172017DUP	Depth to Water after Sampling (ft btoc):	64.95
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	120
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	10/17/2017	Approximate Volume Removed (gal.):	2.2
Sampled By:	C. Price & S. Hensel	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
0901	90								pump on
0903	90								water in cell
0906	90	200		26.16	7.13	3413	5.99	162.8	clear
0908	90	200		26.23	7.13	3411	5.64	159.2	clear
0910	90	200		26.31	7.14	3473	5.39	151.2	clear
0912	90	200		26.27	7.15	3467	5.12	147.5	clear
0914	90	200		26.13	7.16	3453	4.86	143.7	clear
0916	90	200		26.10	7.16	3446	4.77	141.6	clear
0918	90	200		26.07	7.16	3443	4.83	137.8	clear
0920	90	200		26.03	7.16	3439	4.90	135.1	clear
0930	90	100							collect sample
0940	90	100							collect Dup
0955	90		2.2						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [signature]

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-2S	Initial Depth to Water:	66.14
Sample ID:	PT-2S-90- 10172017	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:	—	Depth to Water after Sampling (ft btoc):	66.11
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	100
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	10/17/2017	Approximate Volume Removed (gal.):	1.9
Sampled By:	C. Price & S. Hensel	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1047	90								pump on
1048	90								water in cell
1049	90	200		27.21	7.56	3699	5.49	50.1	clear
1051	90	200		27.08	7.49	3685	5.25	52.1	clear
1053	90	200		27.06	7.54	3683	5.10	54.2	clear
1055	90	200		26.99	7.56	3678	5.10	55.7	clear
1057	90	200		26.80	7.55	3662	5.15	54.9	clear
1059	90	200		26.66	7.57	3650	5.16	54.2	clear
1110	90	100							collect sample
1130			1.9						Pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: _____

HALEY ALDRICH

Instrument Calibration Log

Project	Plymouth Tube Quaterly GW Sampling	File No.	128159-002
Location	Chandler, AZ	Date	10/17/2017
Contractor		Field Rep.	C. Price & S. Hensel
Weather	Sunny - c	Outdoor Temp	75°

Equipment ID YSI 556 MPS 06G2035AQ

Time Calibration Started: 08:30 **Time Calibration Completed:** 08:51

Dissolved Oxygen (100%)

Reading Before Calibration: 11.23

Barometric Pressure: 762.8

Temperature (C°) 23.01

Reading after calibration: 8.59

Probe Type (Check One)

Membrane ☐ Optical ☐

pH 7

Reading Before Calibration: 6.73

Calibration Value: 7.0

Temperature (C°) 22.36

Lot/Expiration: 4611H485 11-1-18

Reading After Calibration: 7.02

pH 10

Reading Before Calibration: 9.88

Calibration Value: 10.0

Temperature (C°) 22.99

Lot/Expiration: 2016070755 7-15-18

Reading After Calibration: 10.00

pH 4

Reading Before Calibration: 4.25

Calibration Value: 4.0

Temperature (C°) 23.69

Lot/Expiration: 2016081168 8-19-18

Reading After Calibration: 4.00

Specific Conductivity/Conductivity (10 ms/cm)

Reading Before Calibration: 1305

Calibration Value: 1413 µS/cm

Temperature (C°) 23.69

Lot/Expiration: KCT160930 9-30-17

Reading After Calibration: 1413

ORP Standard (mv) at 25°C

Reading Before Calibration: ~~22.23~~ CP

Calibration Value: 240 mV

Temperature (C°) 23.73

Lot/Expiration: 0297 05/2021

Reading After Calibration: 240.0

(Check One)

SPOT CHECK ☐ CALIBRATION ☒

Dissolved Oxygen (0 mg/L)

Reading ~~4.23~~ CP

Temperature (C°) ~~22.4~~ CP

Lot/Expiration:

Reading less than 0.20 mg/L?

PM Calibration Check

Time Start: Time End:

DO 100 %

pH 7

pH4

pH10

Conductivity

ORP (mv)

DO 0 mg/L

Notes:

pg 1 of 1

SGS ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest NC Job #: C

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E. Van Buren
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: L. Price S Hensel

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-002
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #:

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B VOC	8260B SIM - 1,4-Dioxane	EPA 300 - Sulfate	SW 846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron	RSK 175 - Methane, ethane, ethene	2320B - Alkalinity	EPA 300 - Chloride	6010/6020 - Sodium			LAB USE ONLY
	PT-3-90-10172017	10-17-17	0930	LP/SH	GW	14	8		3		3				X	X	X	X	X	X	X	X	X			
	PT-3-90-10172017 DOP	"	0940	"	"	3	3								X											
	PT-25-90-10172017	"	1110	"	"	14	8		3		3				X	X	X	X	X	X	X	X	X			
	ERB-101717	↓	1015	↓	↓	3	3								X											
	Trip Blank	↓				2	2								X											

Matrix Codes

WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
OI-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

Turnaround Time (Business days)

Approved By:/ Date:

- [ ] 10 Day
- [ ] 5 Day
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format_____
- Provide EDF Global ID _____
- Provide EDF Logcode: _____

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	10/17 11:30	1 [signature]	2		2
Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Appropriate Bottle / Pres. Y / N	Headspace Y / N	On Ice Y / N	Cooler Temp.
5		5		Labels match Coc? Y / N	Separate Receiving Check List used: Y / N		_____oC

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-2S	Initial Depth to Water:	66.01
Sample ID:	PT-2S-90- 11152017	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:	~~PT-2S-90- 11152017-DUP~~ CP	Depth to Water after Sampling (ft btoc):	66.01
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	100
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	11/15/2017	Approximate Volume Removed (gal.):	1.8
Sampled By:	C. Price & ~~S. Hensel~~ C. Nemanic	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1056	90								pump on
1059	90								water in cell
1103	90	200		25.39	7.03	3486	6.86	178.4	clear
1105	90	200		25.51	7.02	3489	7.14	174.9	clear
1107	90	200		25.36	7.02	3490	7.04	172.4	clear
1109	90	200		25.40	7.02	3490	7.06	170.5	clear
1115	90	100							collecting sample
1146	90		1.8						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [signature]

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-3	Initial Depth to Water:	64.76
Sample ID:	PT-3-90- 11152017	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	64.79
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	120
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	11/15/2017	Approximate Volume Removed (gal.):	1.8 ~~1.3~~ CP
Sampled By:	C. Price ~~& S. Hensel~~ & Nemanic	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
0838	90								pump on
0840	90								water in cell
0844	90	200		24.24	7.02	3346	7.02	213.2	clear
0846	90	200		24.46	7.00	3331	6.79	209.5	clear
0848	90	200		24.60	6.99	3321	6.63	206.3	clear
0850	90	200		24.65	6.98	3317	6.59	203.9	clear
0900	90	100							collecting sample
0925	90		~~1.3~~ CP 1.8						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [signature]

HALEY ALDRICH

Instrument Calibration Log

Project	Plymouth Tube Quaterly GW Sampling	File No.	128159-002
Location	Chandler	Date	11-15-17
Contractor		Field Rep.	C. Price & S. Hensel
Weather	Clear, no wind	Outdoor Temp	54°

Equipment ID: 11E101492 YSI 556 MPS

Time Calibration Started: 0715

Time Calibration Completed: 0735

Dissolved Oxygen (100%)

Reading Before Calibration: 100.6

Barometric Pressure: 761.1

Temperature (C°): 15.26

Reading after calibration: 100.1

Probe Type (Check One)

Membrane [X] Optical [ ]

pH 7

Reading Before Calibration: 7.31

Calibration Value: 7.0

Temperature (C°): 16.31

Lot/Expiration: 4706D46/6-1-19

Reading After Calibration: 7.00

pH 10

Reading Before Calibration: 9.76

Calibration Value: 10.0

Temperature (C°): 16.80

Lot/Expiration: 2017030025/3-20-19

Reading After Calibration: 10.00

pH 4

Reading Before Calibration: 4.15

Calibration Value: 4.0

Temperature (C°): 16.81

Lot/Expiration: 2017051110/5-15-19

Reading After Calibration: 4.00

Specific Conductivity/Conductivity (10 ms/cm)

Reading Before Calibration: 1406

Calibration Value: 1413 ms/cm

Temperature (C°): 16.29

Lot/Expiration: KCT171010/10-10-18

Reading After Calibration: 1413

ORP Standard (mv) at 25°C

Reading Before Calibration: 242.3

Calibration Value: 240 mV

Temperature (C°): 15.97

Lot/Expiration: 1112/2/2022

Reading After Calibration: 240

(Check One)

SPOT CHECK [ ] CALIBRATION [X]

Dissolved Oxygen (0 mg/L)

Reading

Temperature (C°)

Lot/Expiration:

Reading less than 0.20 mg/L?

PM Calibration Check

Time Start: Time End:

DO 100 %

pH 7

pH4

pH10

Conductivity

ORP (mv)

DO 0 mg/L

Notes:

pg 1 of 1

SGS ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest NC Job #: C

Client / Reporting Information

Company Name: Haley + Aldrich
Address: 400 E Van Buren St.
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / C Nemanic

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-002 A
EMAIL: btravers@haleraldrich.com
Client Purchase Order #:

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	1,4-Dioxane 8260SIM									LAB USE ONLY
	PT-3D-126-11152017	11-15-17	0810	PCN	GW	6	6								X	X									
	PT-3-90-11152017	|	0900	|	|	6	6								X	X									
	PT-1S-90-11152017	|	1020	|	|	6	6								X	X									
	PT-2S-90-11152017	|	1115	|	↓	6	6								X	X									
		|		|																				
		|		|																				
		|		|																				
		|		|																				
	ERB-11152017	|	1200	↓		3	3								X										
	Trip Blank	↓				2	2								X										

Matrix Codes
WW - Wastewater
GW - Ground Water
SW - Surface Water
SO - Soil
Oil - Oil
WP - Wipe
LIQ - Non-aqueous Liquid
AIR
DW - Drinking Water (Perchlorate Only)

Turnaround Time (Business days)

- [ ] 10 Day
- [x] 5 Day Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Approved By:/ Date:

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format _____

Provide EDF Global ID _____
Provide EDF Logcode: _____

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	[signature] 11-15-17	11/15/17 15:40	[signature] Ashley Tran			
2						
3	Relinquished by: 15:40	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
4						
5	Relinquished by:	Date Time:	Received By:	Custody Seal #	Appropriate Bottle / Pres. Y / N; Labels match Coc? Y / N	Headspace Y / N; Separate Receiving Check List used: Y / N; On Ice Y / N; Cooler Temp. ____ oC

pg 1 of 1

SGS ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest NC Job #: C

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E Van Buren St
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / C Nemanic

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-003 ☆
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #:

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	EPA 300 - Sulfate	SW846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron HSAM	RSK 175 - Methane, ethane, ethene	2320B - Alkalinity	EPA300 - Chloride	6010/6020 - Sodium					
	PT-3-90-11152017	11-15-17	0900	CP/CN	GW	8	2		3		3				X	X	X	X	X	X	X					
	PT-25-90-11152017	↓	1115	↓	↓	8	2		3		3				X	X	X	X	X	X	X					

Matrix Codes

WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
Oi-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

LAB USE ONLY

Turnaround Time (Business days)

- [ ] 10 Day
- [x] 5 Day Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Approved By:/ Date:

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format_____

Provide EDF Global ID _____

Provide EDF Logcode: _____

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	[signature]	11/15/17 13:40	[signature]	2		2
3				4		4
5						

Custody Seal #:

Appropriate Bottle / Pres. Y / N Headspace Y / N On Ice Y / N Cooler Temp.

Labels match Coc? Y / N Separate Receiving Check List used: Y / N _____oC

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-3	Initial Depth to Water:	64.94
Sample ID:	PT-3-90- 121917	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	64.95
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	120
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	12/19/2017	Approximate Volume Removed (gal.):	1.8
Sampled By:	C. Price & S. Kaney	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
0849	90								pump on
0852	90								water in cell
0855	90	200		21.64	7.10	3053	7.05	179.7	clear
0857	90	200		22.19	7.09	3052	6.90	180.5	clear
0859	90	200		22.21	7.09	3054	6.70	180.9	clear
0901	90	200		22.83	7.09	3053	6.65	181.5	clear
0903	90	200		23.04	7.09	3046	6.61	182.0	clear
0905	90	200		23.11	7.10	3045	6.51	182.4	clear
0910	90	100							collect sample
0938	90		1.8						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [signature]

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-2S	Initial Depth to Water:	66.82
Sample ID:	PT-2S-90- 121917	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	66.83
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	100
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	12/19/2017	Approximate Volume Removed (gal.):	1.60
Sampled By:	C. Price & S. Kaney	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1015	90								Pump on
1015	90								water in cell
1020	90	200		21.90	7.18	3165	6.68	165.0	clear
1022	90	200		22.45	7.16	3175	6.98	166.2	clear
1024	90	200		23.16	7.14	3189	7.05	167.7	clear
1026	90	200		23.46	7.13	3199	7.03	168.6	clear
1028	90	200		23.61	7.13	3205	7.20	169.4	clear
1030	90	200		23.81	7.13	3206	7.03	170.7	clear
1035	90	100							collect sample
1056	90		1.6						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: _____

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	LB-7R	Initial Depth to Water:	66.93
Sample ID:	LB-7R-90- 121917	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:	LB-7R-90-121917-DUP	Depth to Water after Sampling (ft btoc):	66.94
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	101.5
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	12/19/2017	Approximate Volume Removed (gal.):	1.6
Sampled By:	C. Price & S. Kaney	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1129	90								pump on
1131	90								water in cell
1135	90	200		23.41	11.81	9700	35.72	76.4	clear
1137	90	200		23.87	11.84	9834	39.44	80.0	clear
1139	90	200		24.06	11.84	9909	38.26	84.5	clear
1141	90	200		24.17	11.84	9950	38.31	87.6	clear
1143	90	200		24.23	11.84	9988	37.61	92.6	clear
~~1214~~ 1145	90	100							collect sample
CD 1150	90	100							collect dup
1214	90		1.6						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [signature]

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	ISCO-1-D	Initial Depth to Water:	—
Sample ID:	ISCO-1-D-98- 121917	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	—
Sample Depth (ft btoc):	98	Casing Depth (ft bgs):	103
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	12/19/2017	Approximate Volume Removed (gal.):	1.7
Sampled By:	C. Price & S. Kaney	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1408	98								pump in
1410	98								water in cell
1414	98	200		24.92	12.22	9627	37.85	208.0	cloudy
1416	98	200		24.88	12.21	9662	37.96	193.2	cloudy
1418	98	200		24.87	12.22	9684	36.81	179.0	cloudy
1420	98	200		24.85	12.22	9739	35.25	165.9	cloudy
1422	98	200		24.68	12.23	9802	34.19	146.1	cloudy
1424	98	200		24.72	12.23	9818	33.77	142.8	cloudy
1430	98	100							collect sample
1452	98		1.7						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [signature]

ISCO-1-S 66.75' below top of PVC

Pump Start time: 13:00

13:02 presence of water

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	~~LB-7R~~ ~~LP~~ ISCO-1-S	Initial Depth to Water:	66.75
Sample ID:	~~LB-7R~~-85- 121917	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:	~~E~~ ISCO-1-S-	Depth to Water after Sampling (ft btoc):	—
Sample Depth (ft btoc):	85	Casing Depth (ft bgs):	90
Project/Task No.:	128159-002	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	12/19/2017	Approximate Volume Removed (gal.):	1.6
Sampled By:	C. Price & S. Kaney	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1300	85								pump on
1302	85								water in cell
1308	85	200		24.52	11.84	6388	31.28	234.4	clear
1310	85	200		24.45	11.87	6394	31.89	201.0	clear
1312	85	200		24.29	11.87	6390	31.32	185.0	clear
1314	85	200		24.35	11.89	6385	30.58	170.7	clear
1316	85	200		24.29	11.89	6377	30.89	162.4	clear
1318	85	200		24.40	11.90	6371	30.18	155.9	clear
1320	85	100							collect
1350	85		1.60						pump off

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: _____

PO 1 of 1

SGS ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest NC Job #: C

Client / Reporting Information

Company Name: Haley + Aldrich	Project Name: Plymouth Tube
Address: 400 E. Van Buren St.	Street: W Willis
City: Phoenix State: AZ Zip: 85004	City: Chandler State: AZ
Project Contact: Bruce Travers	Project #: 128159-003
Phone #: 480-244-5891	EMAIL: btravers@haleyaldrich.com
Samplers's Name: C Price / S Kaney	Client Purchase Order #:

Project Information

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260 B	8260 SIM (1,4-Dioxane)	EPA 300 - Sulfate	SW 846 6010/6020 - Total Iron	6010/6020 - ferrous iron Field Filtered 45 Am	RSK 175 - methane, ethane ethene	2320 B - Alkalinity	EPA300 - Chloride	6010/6020 - Sodium			LAB USE ONLY
	PT-3-90-121917	12-19-17	0910	CP/SK	GW	11	8		1		2				X	X	X	X	X	X	X	X	X			
	PT-2S-90-121917		1035			11	8		1		2				X	X	X	X	X	X	X	X	X			
	LB-7R-90-121917 *		1145			11	8		1		2				X	X	X	X	X	X	X	X	X			
	ISCO-1-S-85-121917 *		1320			11	8		1		2				X	X	X	X	X	X	X	X	X			
	ISCO-1-D-98-121917 *		1430			11	8		1		2				X	X	X	X	X	X	X	X	X			
	LB-7R-90-121917-DUP		1150			3	3								X						* - Samples					
	ERB-121917		220			3	3								X					have high pH						
	Trip Blank					4	4								X					11.8 - 12.2						

Matrix Codes

WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
OI-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

Turnaround Time (Business days)

	Approved By:/ Date:
10 Day	
5 Day	
3 Day	
2 Day	
1 Day	
Same Day	

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format_____

Provide EDF Global ID _____

Provide EDF Logcode: _____

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Chad [signature]	12-19-17 16:12	1 Ashley Lucum	2		2
Relinquished by: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #		

Appropriate Bottle / Pres. Y / N Headspace Y / N On Ice Y / N Cooler Temp. _____ oC

Labels match Coc? Y / N Separate Receiving Check List used: Y / N

HALEY ALDRICH

Instrument Calibration Log

Project	Plymouth Tube Quaterly GW Sampling	File No.	128159-002
Location	Chandler, AZ	Date	12/19/2017
Contractor		Field Rep.	C. Price & S. Kaney
Weather	clear, Sunny	Outdoor Temp	45°

Equipment ID YSI 445MPS S/N: 11K101301

Time Calibration Started: 0817 **Time Calibration Completed:**

Dissolved Oxygen (100%)

Reading Before Calibration: 98.2%
Barometric Pressure: 765.9
Temperature (C°) 51.02 F
Reading after calibration: 100.7%

Probe Type (Check One)
Membrane ☐ Optical ☐

Specific Conductivity/Conductivity (10 ms/cm)

Reading Before Calibration: 1375
Calibration Value: 1413 ms/cm
Temperature (C°) 54 F
Lot/Expiration: KCT171010 / 10/14/18
Reading After Calibration: 1413

ORP Standard (mv) at 25°C

Reading Before Calibration: 250.6
Calibration Value: 240mV
Temperature (C°) 53 F
Lot/Expiration: 1112 / 02/2022
Reading After Calibration: 240.0

(Check One)
SPOT CHECK ☐ CALIBRATION ☐

pH 7

Reading Before Calibration: 7.09
Calibration Value: 7.0
Temperature (C°) 53 F
Lot/Expiration: 4706D46 / 06/01/2019
Reading After Calibration: 7.07

Dissolved Oxygen (0 mg/L)

Reading
Temperature (C°)
Lot/Expiration:
Reading less than 0.20 mg/L?

pH 10

Reading Before Calibration: 9.72
Calibration Value: 10.0
Temperature (C°) 53 F
Lot/Expiration: 20170307 25 / 03/20/2019
Reading After Calibration: 10.00

PM Calibration Check

Time Start:	Time End:
DO 100 %	
pH 7	
pH4	
pH10	
Conductivity	
ORP (mv)	
DO 0 mg/L	

pH 4

Reading Before Calibration: 4.39
Calibration Value: 4.01
Temperature (C°) 54 F
Lot/Expiration: 20170~~307 25~~ 51110 SK / ~~03/20~~ 05/15/2019 SK
Reading After Calibration: 4.00

Notes:

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	LB-7R	Initial Depth to Water:	66.23
Sample ID:	LB-7R-90- 031518	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	66.24
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	101.5
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	3/15/2018	Approximate Volume Removed (gal.):	~1. gal
Sampled By:	K. Ford & S. Hensel	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1211	90								Start pump
1214									Water in cell
1217		200		26.14	11.01	7105	27.71	71.4	clear
1219		200		26.01	11.06	7085	22.58	76.9	clear
1221		200		25.94	11.07	7064	21.60	79.5	clear
1223		200		25.89	11.08	7039	20.11	85.9	clear
1225		200		25.77	11.06	7006	18.39	90.2	clear
1227		200		25.78	11.05	6996	18.55	94.1	clear
1229		200		25.81	11.04	6999	18.25	98.8	clear
1230		100							Collect sample

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [illegible]

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	ISCO-1-S	Initial Depth to Water:	66.24
Sample ID:	ISCO-1-S-85- 031518	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:	ISCO-1-S-85-031518-DUP	Depth to Water after Sampling (ft btoc):	66.25
Sample Depth (ft btoc):	85	Casing Depth (ft bgs):	90
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	3/15/2018	Approximate Volume Removed (gal.):	~2 gal.
Sampled By:	K. Ford & S. Hazel	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1445	85								Start pump.
1447									water in cell
-									(Fix leaking flow cell)
1453	85	200		23.99	10.24	4955	23.33	293.6	v. slightly cloudy, colorless
1455		200		23.90	10.21	4946	18.72	277.8	"
1457		200		23.91	10.22	4927	17.66	258.9	"
1459		200		24.12	10.23	4951	17.27	246.6	clear
1501		200		24.65	10.22	4998	16.77	227.8	clear
1503		200		24.90	10.22	5021	16.36	218.3	"
1505		200		24.90	10.22	5031	16.42	208.4	"
1507		200		25.05	10.23	5048	16.58	197.7	"
1509		200		25.07	10.23	5061	16.24	189.7	"
1511		200		25.23	10.23	5089	16.17	181.8	"
1513		200		25.16	10.24	5094	16.32	174.3	"
1515		200		24.91	10.24	5081	16.30	168.1	"
1517		200		25.01	10.25	5098	16.23	164.1	"
1519		200		25.04	10.26	5110	16.30	159.9	"
1521		200		24.99	10.26	5111	16.30	156.3	"
1525		100							Collect sample
1530		100							Collect DUP

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [illegible]

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	ISCO-1-D	Initial Depth to Water:	66.24
Sample ID:	ISCO-1-D-98- 031518	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	66.25
Sample Depth (ft btoc):	98	Casing Depth (ft bgs):	103
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	3/15/2018	Approximate Volume Removed (gal.):	1.4 gal
Sampled By:	K. Ford & S. Hensel	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1337	98								Start pump
1341									Water in cell
1345		200		25.02	11.05	6826	21.59	248.6	clear → cloudy
1347		–		–	–	–	–	–	change CO_2 tank
1350		200		24.04	11.08	6804	19.97	211.9	cloudy, lt. brown
1352		200		24.07	11.09	6828	19.21	204.8	~~partly~~ sl. cloudy, colorless
1354		200		24.83	11.09	6963	19.22	197.8	sl. cloudy, colorless
1356		200		24.75	11.10	6996	18.88	203.3	sl. cloudy, colorless
1358		200		24.60	11.09	7013	18.29	206.2	v. sl. cloudy, colorless
1400		200		24.52	11.09	7028	18.32	214.3	"
1402		200		24.44	11.10	7034	18.18	219.1	"
1404		200		24.31	11.09	7032	18.25	221.6	"
1406		200		24.31	11.10	7038	18.38	220.1	"
1410		100							Collect sample

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [illegible]

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-2S	Initial Depth to Water:	65.54
Sample ID:	PT-2S-90- 031518	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	65.54
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	100
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	3/15/2018	Approximate Volume Removed (gal.):	~1.4 gal.
Sampled By:	K. Ford + S. Hensel	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	~~Cum. Vol. (gallons)~~	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
1054	90								start pump
1056	90								water in cell
1102	90	200		24.62	7.17	3427	8.21	140.1	clear
1105	90	200		24.88	7.20	3452	7.09	142.4	clear
1108	90	200		24.88	7.19	3447	6.70	144.2	clear
1111	90	200		24.88	7.18	3451	6.38	144.8	clear
1114	90	200		24.84	7.18	3435	6.27	146.4	clear
1117	90	200		24.54	7.16	3418	5.99	148.3	clear
1120		100							collect sample

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature:_____

HALEY & ALDRICH WELL SAMPLING RECORD

Well ID:	PT-3	Initial Depth to Water:	64.30
Sample ID:	PT-3-90- 031518	Depth to Water at Sampling Mid-Point (ft btoc):	N/A
Duplicate ID:		Depth to Water after Sampling (ft btoc):	64.30
Sample Depth (ft btoc):	90	Casing Depth (ft bgs):	120
Project/Task No.:	128159-003	Well Diameter (inches):	4
Project Name:	Plymouth Tube	Minimum Purge Volume Required:	N/A
Sample Date:	3/15/2018	Approximate Volume Removed (gal.):	~1 gal.
Sampled By:	K. Ford & S Hensel	Method of Sampling/Purging:	QED Bladder Pump

Time	Intake Depth	Rate (mL/min)	Cum. Vol. (gallons)	Temp. (°C)	pH (S.U.)	Specific Electrical Conductance (uS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Remarks (color, turbidity, and sediment)
0808	90								Start pump
0809									Water in cell
0812		200		22.30	7.27	3148	6.60	240.3	clear
0814		200		22.74	7.25	3175	6.38	237.4	clear
0816		200		23.21	7.24	3185	6.18	232.8	clear
0818		200		23.45	7.23	3195	6.00	229.0	clear
0820		200		23.66	7.23	3203	5.87	225.0	clear
0822		200		23.77	7.22	3208	5.89	222.8	clear
0824		200		23.82	7.22	3212	5.71	221.0	clear
0830		100							collect sample

Water Quality Meter Make/Model: YSI 556

Field Personnel Signature: [illegible]

SGS ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest NC Job #: C

Client / Reporting Information

Company Name: HALEY + ALDRICH
Address: 400 E VAN BUREN ST #545
City: PHOENIX State: AZ Zip: 85004
Project Contact: BRUCE TRAVERS
Phone #: 480-244-5891
Samplers's Name: KFORD / S. HENSEL

Project Information

Project Name: PLYMOUTH TUBE
Street: W. WILLIS
City: CHANDLER State: AZ
Project #: 128159-003
EMAIL:
Client Purchase Order #:

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	8260 SIM (1,4 Dioxane)	EPA 300 - SULFATE	SW846 6010/6020 TOTAL IRON	6010/6020 FERROUS IRON FIELD FILTERED 45 µm	RSK 175 Methane Ethane, Ethene	2320B - Alkalinity	EPA 300 Chloride	6010/6020 Sodium			LAB USE ONLY
	PT-3-90-031518	3/15/18	0830	KF/SH	GW	11	8		1		2				X	X	X	X	X	X	X	X	X			
	PT-25-90-031518	↓	1120	↓	GW	11	8		1		2				X	X	X	X	X	X	X	X	X			
	LB-7R-90-031518	↓	1230	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X			
	ISCO-1-D-98-031518	↓	1410	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X			
	ISCO-1-S-85-031518	↓	1525	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X			
	ERB-031518	↓	1300	↓	↓	3	3								X											
	ISCO-1-S-85-031518-DUP	↓	1530	↓	↓	3	3								X											
	TRIP BLANK														X											

Matrix Codes

WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
Ol-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

Turnaround Time (Business days)

- [ ] 10 Day
- [ ] 5 Day
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Approved By:/ Date:

Std

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format_____
- Provide EDF Global ID _____
- Provide EDF Logcode: _____

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3-15-18 1700	1	2		2
Relinquished by: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Appropriate Bottle / Pres. Y / N	Headspace Y / N

Labels match Coc? Y / N Separate Receiving Check List used: Y / N

On Ice Y / N Cooler Temp. _____ oC

Location: Plymouth Tube
Date: 6/27/17
Geologist: R. Moore
Borehole Diameter: 10"

Drilling Company and Rig: Cascade 600T
Drilling and Sampling Method: Sonic
Backfill Material:

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
0-8	sandy silt	ML	/	TR	5	35	60	2mm	/	sa-sr	N	N	N	stg

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
greater calc content from 5-7.5	/	0.2	dry	soft	reddish brn 4/4 5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
8-10.5	silty sand	SM	5	5	15	45	30	1.5cm	sr	sa-sr	N	N	N	stg

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft	0.5	dry	~~soft~~	red brn 4/3 5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
10.5-11	well graded sand w/ silt + gravel	SW-SM	40	5	30	15	10	2cm	sr	sa	N	N	N	wk

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft	0.4	dry	/	strong brn 4/6 7.5YR

Scanned by CamScanner

Location: Plymouth Tube

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
11-14.5	Caliche	caliche/ ML	TR	5	5	40	50	2cm	SR	Sa	N	N	M	Stg

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
Common caliche concretions up to 5cm diameter concretions increase downward (+ silt content)	—	0.3	dry	soft	very pale brn 7/4 10YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
14.5-25	Lean clay w/ caliche	CL	—	TR	5	25	70	2mm	—	SR	M	M	M	wk

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
Clay content increases downward color change at 22' to brn 5/4 7.5YR	—	0.2	dry - moist	M. stiff	Light brn 6/4 7.5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
25-35	Lean clay	CL	—	—	5	20	75	1.5mm	—	Sa	M	M	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
color change at 30' to pale olive 6/3 5Y	—	0.1	dry	V. stiff	yellowish red 4/6 5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
35-36.5	Caliche	caliche/ ML	—	—	10	25	65	1.5mm	—	Sa	N	N	M	Stg

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	—	0.2	dry	soft	very pale brn 7/4 10YR

Scanned by CamScanner

Location: Plymouth Tube

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
36.5-44	lean clay w/ caliche	CL	/	/	10	15	75	1 mm	/	sa-a	M	M	M	wk

Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
/	0.2	dry	v. stiff	yellowish red 4/6 5YR

Comments:

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
44-49	Lean clay	CL	/	/	/	20	80	0.4 mm	/	sr	M	M	H	N

Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
/	0.2	dry - moist	v. stiff	reddish brn 4/4 5YR

Comments:

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
49-50	silty sand	SM	/	/	5	60	35	0.4	/	sa	N	N	N	stg

Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
soft	0.3	dry	/	light brn 6/4 7.5YR

Comments:

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
50-55	caliche	caliche/ ML	/	/	5	20	75	2 mm	/	sa	N	N	N	stg

Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
/	0.2	dry	soft	very pale brn 7/4 10YR

Comments:

Scanned by CamScanner

Location: Plymouth Tube

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
55-60	clayey sand	SC	/	TR	10	65	25	2mm	—	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
PID at 55' 0.5 ppm at 60' 1.2 ppm	soft	1.2	dry - moist	—	strong brn 4/6 5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
60-79	Fat clay	CH	/	—	TR	10	90	1mm	/	sr	H	H	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
competent clay w/ caliche concretions up to 2cm diameter	—	@62' 64.1 @64' 73.7 @67' 242.0	dry / moist	very stiff	reddish brn 5/4 5YR

SC lense from 64.5-65' 110.1 ppm on PID @70' 250.3 @72' 424.6 @74' 186.2 @76' 110.8 @78 183.1
Saturated from 70-72.5'

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
79-84.5	well graded gravel w/ clay + sand	GW-GC	60	15	10	5	10	9 cm	sr	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft	14.1	moist - saturated	—	brn 5/4 7.5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
84.5-87.5	poorly graded sand w/ gravel	SP	15	5	40	35	5	5 cm	sr	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft / loose	3.3	moist	—	strong brn 4/6 7.5YR

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Location: Plymouth Tube

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
87.5-89	well graded gravel w/ clay + sand	GW-GC	60	20	5	5	10	6-5cm	sr	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft / loose	1.2	moist	—	brn 5/4 7.5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
89-90	Lean clay	CL	—	—	TR	20	80	1mm	—	sr	M	M	M	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	—	1.0	dry - moist	stiff	reddish brn 5/4 YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
90-94	clayey gravel w/ sand	GC	60	10	10	5	15	5cm	sr	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft/loose	0.9	moist	—	brn 5/4 7.5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
94-95	sandy lean clay w/ gravel	CL	25	5	5	25	40	8cm	sa-sr	sa-sr	M	M	M	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	—	2.2	moist	soft	reddish brn 5/4 5YR

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Location: Plymouth Tube

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
95-100	well graded gravel w/ clay + sand	GW-GC	45	20	15	10	10	13 cm	sr	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
Clay content decreases downward Sand content increases downward (coarsening downward)	soft/loose	@97' 0.4 @99' 0.3	moist	—	brn 5YR 5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
100-102	poorly graded sand w/ gravel	SP	15	15	55	10	5	3 cm	sr	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft/loose	0.7	moist	—	brn 5/4 5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
102-104	well graded gravel w/ sand	GW	45	25	20	5	5	6 cm	sr	sa-sr	N	N	N	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
	soft/loose	0.3	moist	—	~~reddish brn~~ brn 5/4 7.5YR

Depth	USCS Name	USCS Symbol	% Gravel Coarse /Fine	% SAND CRS	% SAND MED	% SAND FN	% Fines	Coarse-Grained Information Max.	Coarse-Grained Information Gravel Round	Coarse-Grained Information Sand Round	Fine-Grained Information Plastic	Fine-Grained Information Tough	Fine-Grained Information Dilat/ Dry Strg	HCL Rxn
104-105	lean clay w/ sand	CL	20	5	5	10	60	5 cm	sr	sa-sr	M	M	M	N

Comments:	Hardness	PID/Odor	Moisture/Shape/Hardness/Cement	Consistency	Color
TD at 105 Hole later collapsed to 103'	—	0.3	moist	stiff	reddish brn 5/4 5YR

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APPENDIX D

Laboratory Reports

SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich - Phoenix, AZ

Plymouth Tube Groundwater Monitoring - Chandler, AZ

128159.002

SGS Accutest Job Number: TD6115

Sampling Date: 07/11/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: 44

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2016-170) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: TD6115-1: ISCO-1-D-98-071117 8
4.2: TD6115-2: ISCO-1-S-85-071117 12
4.3: TD6115-3: TRIP BLANK 16
Section 5: Misc. Forms **19**
5.1: Arizona Qualifiers 20
5.2: Chain of Custody 21
Section 6: GC/MS Volatiles - QC Data Summaries **25**
6.1: Method Blank Summary 26
6.2: Blank Spike Summary 30
6.3: Matrix Spike/Matrix Spike Duplicate Summary 34
Section 7: Misc. Forms (SGS Accutest Southeast) **38**
7.1: Chain of Custody 39
Section 8: GC/MS Volatiles - QC Data (SGS Accutest Southeast) **41**
8.1: Method Blank Summary 42
8.2: Blank Spike Summary 43
8.3: Matrix Spike/Matrix Spike Duplicate Summary 44

SGS Accutest

Sample Summary

Haley & Aldrich - Phoenix, AZ

Job No: TD6115

Plymouth Tube Groundwater Monitoring - Chandler, AZ
Project No: 128159.002

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD6115-1	07/11/17	07:05		07/12/17	AQ	Ground Water	ISCO-1-D-98-071117
TD6115-2	07/11/17	08:15		07/12/17	AQ	Ground Water	ISCO-1-S-85-071117
TD6115-3	07/11/17	00:00		07/12/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich - Phoenix, AZ	**Job No**	TD6115
Site:	Plymouth Tube Groundwater Monitoring - Chandler, AZ	**Report Date**	7/18/2017 3:58:35 PM

2 Samples were collected on 07/11/2017 and received intact at Accutest on 07/12/2017 and properly preserved in 1 cooler at 1.9 Deg C. The samples received an Accutest job number of TD6115. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1772

- All data for batch F:MS37795 was analyzed at SGS Accutest, Fl.

Volatiles by GCMS By Method SW846 8260C

Matrix: AQ **Batch ID:** VG2379

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD6156-6MS, TD6156-6MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methyl bromide are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Methyl bromide are outside control limits. Probable cause due to matrix interference.
- TD6115-1 for Chloroform: AZ:E4

Matrix: AQ **Batch ID:** VG2383

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD6115-1MS, TD6115-1MSD were used as the QC samples indicated.
- TD6115-2: AZ:D2
- TD6115-1: AZ:D2

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job**	TD6115
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring -	**Report**	7/18/2017 8:39:44

2 Samples were collected on 07/11/2017 and were received at SGS Accutest Southeast (SASE) on 07/13/2017 properly preserved, at 3 Deg. C and intact. These Samples received an SASE job number of TD6115. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1772

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45756-1MS, FA45756-1MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

Date: July 18, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD6115
Account: Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Collected: 07/11/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD6115-1	**ISCO-1-D-98-071117**					
1,4-Dioxane [a]		18.8	1.0	0.30	ug/l	SW846 8260B BY SIM
Chloroform [b]		0.30 J	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene		44.9	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene [c]		238	2.5	1.5	ug/l	SW846 8260C
TD6115-2	**ISCO-1-S-85-071117**					
1,4-Dioxane [a]		92.3	2.0	0.60	ug/l	SW846 8260B BY SIM
Chloroform		0.71	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethane		1.1	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene [c]		166	5.0	3.0	ug/l	SW846 8260C
1,2-Dichloroethane		0.51	0.50	0.30	ug/l	SW846 8260C
Tetrachloroethylene		0.57	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene [c]		799	5.0	3.0	ug/l	SW846 8260C
TD6115-3	**TRIP BLANK**					

No hits reported in this sample.

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) AZ:E4
(c) AZ:D2

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0274635.D	1	07/14/17 20:59	ZQ	n/a	n/a	VG2379
Run #2 [a]	G0274684.D	5	07/17/17 13:39	ZQ	n/a	n/a	VG2383

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform [b]	0.30	0.50	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	44.9	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	238 [c]	2.5	1.5	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	95%	98%	68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	103%	102%	80-119%
460-00-4	4-Bromofluorobenzene	97%	98%	72-126%

(a) AZ:D2
(b) AZ:E4
(c) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z47021.D	1	07/14/17 11:16	AFL	n/a	n/a	F:VZ1772
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	18.8	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	112%		74-125%
2037-26-5	Toluene-D8	107%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0274636.D	1	07/14/17 21:24	ZQ	n/a	n/a	VG2379
Run #2 [a]	G0274685.D	10	07/17/17 14:03	ZQ	n/a	n/a	VG2383

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	0.71	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	1.1	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	166 [b]	5.0	3.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	0.51	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.57	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	799 [b]	5.0	3.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	95%	98%	68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	104%	104%	80-119%
460-00-4	4-Bromofluorobenzene	98%	98%	72-126%

(a) AZ:D2
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z47033.D	2	07/14/17 15:32	AFL	n/a	n/a	F:VZ1772
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	92.3	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	107%		74-125%
2037-26-5	Toluene-D8	104%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD6115-3	**Date Sampled:**	07/11/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0274616.D	1	07/14/17 13:14	ZQ	n/a	n/a	VG2379
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD6115-3	**Date Sampled:**	07/11/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	94%		68-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD6115-3	**Date Sampled:**	07/11/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # 7796 0668 3315
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest Job # TD6115

Client / Reporting Information

Company Name: Haley & Aldrich
Street Address: 400 E. Van Buren St.
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers E-mail: btravers@haleyaldrich.com
Phone #: 480-244-5891 Fax #:
Sampler(s) Name(s): Chad Price & Drew Brewer Phone #:

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 126159-002
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analyses

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

SGS Accutest Sample #	Field ID / Point of Collection	Collection Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MeOH	TSP	NaHSO4	ENCORE	OTHER	8260B	8260SIM (1,4-Dioxane)	LAB USE ONLY
1	ISCO-1-D-98-071117	7-11-17	0705	CP DB	GW	6	6												X	X	
2	ISCO-1-S-85-071117	7-11-17	0815	CP DB	GW	6	6												X	X	
3	Trip Blank					2	2												X		

Turnaround Time (Business days)

- ☐ Standard
- ☒ 5 Day *RUSH*
- ☐ 4 Day *RUSH*
- ☐ 3 Day *RUSH*
- ☐ 2 Day *RUSH*
- ☐ 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULT1 (Level 3+4)
- ☐ REDT1 (Level 3+4)
- ☐ Commercial "C"
- ☐ TRRP
- ☐ EDD Format
- ☐ Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Form: SM021-0

Comments / Special Instructions: Possible High Concentrations

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1	10:50 7/11/17		7/11/17 1850		7/11/17 1630	Fedex	
3 Fedex		3	1030 7/12/17				
Relinquished by: 5	Date Time:	Received By: 5	Date Time:	Custody Seal #	Intact / Not intact	Preserved where applicable	On Ice ☑ Cooler Temp. 1.9

TD6115: Chain of Custody
Page 1 of 4

SGS ACCUTEST

COOLER TEMP FORM

TC# TD6115

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 7-12-17

Client: Haley & Aldrich

Cooler Number:

Thermometer ID: JR9 CF, °C 0.0 Corrected Temp, °C 1.9

SAMPLES CONTAINED IN COOLER

ORIGIN ID:MSCA (480) 275-8931
BETH PROFFITT
ACCUTEST TEMPE SERVICE CENTER
1741 W. UNIVERSITY DR.
SUITE 149
TEMPE, AZ 85281
UNITED STATES US

SHIP DATE: 11JUL17
ACTWGT: 20.00 LB
CAD: 104695527/INET3850
DIMS: 18x16x18 IN
BILL RECIPIENT

TO SAMPLE RECEIVING
ACCUTEST LABORATORIES
SAM HOUSTON PKY W
HOUSTON TX 77071
(713) 271-4700 REF: SAMPLES
INV:
PO: DEPT:

5/6J1/C0C2/53C1

FedEx Express

WED - 12 JUL HOLD
PRIORITY OVERNIGHT
HLD
SGRA
IAH
TX-US

TRK# 0201 7796 0668 3375

AB SGRA

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet

ACCUTEST
Initial [illegible] Date 7/11/17

Rev 10/24/2016

TD6115: Chain of Custody
Page 2 of 4

SGS Accutest Sample Receipt Summary

Job Number: TD6115 **Client:** HALEY& ADLRICH **Project:** PLYMOUTH TUBE

Date / Time Received: 7/12/2017 10:30:00 AM **Delivery Method:** **Airbill #'s:** 779606683375

No. Coolers: 1 **Therm ID:** IR9; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (1.9/1.9);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑	☐	☐	☑	☐
2. Trip Blank listed on COC:	☑	☐	☐		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Sample Receipt Log

Job #: TD6115 **Date / Time Received:** 7/12/2017 10:30:00 AM 10:3 **Initials:** DS

Client: HALEY& ADLRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD6115-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
	TD6115-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD6115-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-MB	G0274615.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-MB	G0274615.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	72-122%

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-MB	G0274615.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	94%	68-124%
2037-26-5	Toluene-D8	103%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2383-MB	G0274678.D	1	07/17/17	ZQ	n/a	n/a	VG2383

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2

CAS No.	Compound	Result	RL	MDL	Units	Q
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	98%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-BS	G0274613.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	96.0	77	46-129
71-43-2	Benzene	25	24.3	97	68-119
108-86-1	Bromobenzene	25	24.4	98	71-119
74-97-5	Bromochloromethane	25	22.4	90	71-118
75-27-4	Bromodichloromethane	25	23.0	92	72-118
75-25-2	Bromoform	25	24.3	97	54-123
104-51-8	n-Butylbenzene	25	24.2	97	66-123
135-98-8	sec-Butylbenzene	25	23.3	93	72-123
98-06-6	tert-Butylbenzene	25	22.2	89	70-124
108-90-7	Chlorobenzene	25	22.9	92	74-120
75-00-3	Chloroethane	25	22.1	88	61-132
67-66-3	Chloroform	25	22.0	88	73-122
95-49-8	o-Chlorotoluene	25	22.7	91	71-122
106-43-4	p-Chlorotoluene	25	22.3	89	73-120
56-23-5	Carbon tetrachloride	25	21.5	86	73-133
75-34-3	1,1-Dichloroethane	25	23.2	93	72-121
75-35-4	1,1-Dichloroethylene	25	23.2	93	67-140
563-58-6	1,1-Dichloropropene	25	22.8	91	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	22.1	88	57-133
106-93-4	1,2-Dibromoethane	25	23.2	93	69-121
107-06-2	1,2-Dichloroethane	25	21.8	87	68-121
78-87-5	1,2-Dichloropropane	25	22.2	89	72-116
142-28-9	1,3-Dichloropropane	25	21.9	88	70-118
108-20-3	Di-Isopropyl ether	25	22.8	91	67-117
594-20-7	2,2-Dichloropropane	25	23.9	96	57-141
124-48-1	Dibromochloromethane	25	23.4	94	68-119
75-71-8	Dichlorodifluoromethane	25	23.9	96	29-182
156-59-2	cis-1,2-Dichloroethylene	25	22.8	91	72-117
10061-01-5	cis-1,3-Dichloropropene	25	24.0	96	71-118
541-73-1	m-Dichlorobenzene	25	22.9	92	73-117
95-50-1	o-Dichlorobenzene	25	22.4	90	71-117
106-46-7	p-Dichlorobenzene	25	21.9	88	71-116
156-60-5	trans-1,2-Dichloroethylene	25	23.0	92	68-124
10061-02-6	trans-1,3-Dichloropropene	25	25.7	103	72-127
100-41-4	Ethylbenzene	25	24.9	100	71-117
637-92-3	Ethyl tert-Butyl Ether	25	22.9	92	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-BS	G0274613.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	107	86	49-124
87-68-3	Hexachlorobutadiene	25	22.8	91	62-143
98-82-8	Isopropylbenzene	25	23.4	94	74-141
99-87-6	p-Isopropyltoluene	25	25.9	104	72-126
108-10-1	4-Methyl-2-pentanone	125	105	84	54-122
74-83-9	Methyl bromide	25	27.0	108	53-138
74-87-3	Methyl chloride	25	25.2	101	50-145
74-95-3	Methylene bromide	25	22.4	90	71-117
75-09-2	Methylene chloride	25	24.6	98	60-125
78-93-3	Methyl ethyl ketone	125	113	90	51-129
1634-04-4	Methyl Tert Butyl Ether	25	22.7	91	65-119
91-20-3	Naphthalene	25	27.6	110	53-139
103-65-1	n-Propylbenzene	25	23.1	92	72-123
100-42-5	Styrene	25	25.6	102	74-119
994-05-8	Tert-Amyl Methyl Ether	25	22.7	91	63-119
75-65-0	Tert Butyl Alcohol	250	219	88	45-146
630-20-6	1,1,1,2-Tetrachloroethane	25	24.0	96	74-119
71-55-6	1,1,1-Trichloroethane	25	21.9	88	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	22.5	90	62-121
79-00-5	1,1,2-Trichloroethane	25	23.2	93	70-119
87-61-6	1,2,3-Trichlorobenzene	25	25.4	102	44-144
96-18-4	1,2,3-Trichloropropane	25	22.0	88	61-124
120-82-1	1,2,4-Trichlorobenzene	25	25.0	100	57-132
95-63-6	1,2,4-Trimethylbenzene	25	24.5	98	70-121
108-67-8	1,3,5-Trimethylbenzene	25	24.5	98	66-119
127-18-4	Tetrachloroethylene	25	22.6	90	72-132
108-88-3	Toluene	25	24.4	98	73-119
79-01-6	Trichloroethylene	25	22.5	90	73-121
75-69-4	Trichlorofluoromethane	25	21.4	86	46-152
75-01-4	Vinyl chloride	25	22.8	91	54-126
1330-20-7	Xylene (total)	75	71.3	95	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	72-122%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-BS	G0274613.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	94%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2383-BS	G0274676.D	1	07/17/17	ZQ	n/a	n/a	VG2383

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
75-35-4	1,1-Dichloroethylene	25	25.2	101	67-140
79-01-6	Trichloroethylene	25	23.6	94	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	97%	68-124%
2037-26-5	Toluene-D8	103%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6156-6MS	G0274625.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6MSD	G0274626.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6	G0274617.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	TD6156-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		125	96.7	77	125	92.8	74	4	46-129/25
71-43-2	Benzene	ND		25	27.4	110	25	26.3	105	4	68-119/12
108-86-1	Bromobenzene	ND		25	27.0	108	25	26.6	106	1	71-119/12
74-97-5	Bromochloromethane	ND		25	24.8	99	25	23.7	95	5	71-118/13
75-27-4	Bromodichloromethane	ND		25	25.0	100	25	24.3	97	3	72-118/16
75-25-2	Bromoform	ND		25	25.3	101	25	24.9	100	2	54-123/17
104-51-8	n-Butylbenzene	ND		25	27.4	110	25	26.4	106	4	66-123/14
135-98-8	sec-Butylbenzene	ND		25	26.9	108	25	26.0	104	3	72-123/13
98-06-6	tert-Butylbenzene	ND		25	25.6	102	25	24.9	100	3	70-124/15
108-90-7	Chlorobenzene	ND		25	25.2	101	25	24.9	100	1	74-120/12
75-00-3	Chloroethane	ND		25	29.4	118	25	29.2	117	1	61-132/16
67-66-3	Chloroform	ND		25	24.9	100	25	23.9	96	4	73-122/13
95-49-8	o-Chlorotoluene	ND		25	25.5	102	25	24.7	99	3	71-122/12
106-43-4	p-Chlorotoluene	ND		25	25.4	102	25	24.5	98	4	73-120/12
56-23-5	Carbon tetrachloride	ND		25	25.1	100	25	24.3	97	3	73-133/20
75-34-3	1,1-Dichloroethane	ND		25	26.4	106	25	25.4	102	4	72-121/14
75-35-4	1,1-Dichloroethylene	ND		25	27.6	110	25	26.4	106	4	67-140/18
563-58-6	1,1-Dichloropropene	ND		25	27.0	108	25	25.4	102	6	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		25	23.2	93	25	23.1	92	0	57-133/23
106-93-4	1,2-Dibromoethane	ND		25	25.0	100	25	24.2	97	3	69-121/13
107-06-2	1,2-Dichloroethane	ND		25	23.8	95	25	23.1	92	3	68-121/12
78-87-5	1,2-Dichloropropane	ND		25	24.7	99	25	24.0	96	3	72-116/12
142-28-9	1,3-Dichloropropane	ND		25	23.8	95	25	22.9	92	4	70-118/12
108-20-3	Di-Isopropyl ether	ND		25	25.0	100	25	23.9	96	4	67-117/13
594-20-7	2,2-Dichloropropane	ND		25	25.9	104	25	24.8	99	4	57-141/16
124-48-1	Dibromochloromethane	ND		25	25.5	102	25	24.9	100	2	68-119/15
75-71-8	Dichlorodifluoromethane	ND		25	33.2	133	25	32.4	130	2	29-182/23
156-59-2	cis-1,2-Dichloroethylene	ND		25	25.9	104	25	24.7	99	5	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		25	25.9	104	25	25.1	100	3	71-118/18
541-73-1	m-Dichlorobenzene	ND		25	25.4	102	25	24.8	99	2	73-117/12
95-50-1	o-Dichlorobenzene	ND		25	24.7	99	25	24.2	97	2	71-117/11
106-46-7	p-Dichlorobenzene	ND		25	24.3	97	25	23.7	95	3	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		25	26.6	106	25	25.4	102	5	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		25	27.3	109	25	26.4	106	3	72-127/17
100-41-4	Ethylbenzene	ND		25	27.9	112	25	27.1	108	3	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		25	24.1	96	25	23.3	93	3	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6156-6MS	G0274625.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6MSD	G0274626.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6	G0274617.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	TD6156-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		125	114	91	125	112	90	2	49-124/21
87-68-3	Hexachlorobutadiene	ND		25	24.8	99	25	24.8	99	0	62-143/18
98-82-8	Isopropylbenzene	ND		25	27.0	108	25	26.2	105	3	74-141/13
99-87-6	p-Isopropyltoluene	ND		25	29.5	118	25	28.4	114	4	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		125	112	90	125	110	88	2	54-122/20
74-83-9	Methyl bromide	ND		25	35.7	143*	25	35.4	142*	1	53-138/16
74-87-3	Methyl chloride	ND		25	34.1	136	25	33.0	132	3	50-145/17
74-95-3	Methylene bromide	ND		25	24.2	97	25	23.5	94	3	71-117/12
75-09-2	Methylene chloride	ND		25	23.9	96	25	22.9	92	4	60-125/16
78-93-3	Methyl ethyl ketone	ND		125	112	90	125	101	81	10	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		25	23.5	94	25	22.9	92	3	65-119/13
91-20-3	Naphthalene	ND		25	30.3	121	25	29.3	117	3	53-139/28
103-65-1	n-Propylbenzene	ND		25	26.7	107	25	25.8	103	3	72-123/13
100-42-5	Styrene	ND		25	28.3	113	25	27.4	110	3	74-119/19
994-05-8	Tert-Amyl Methyl Ether	ND		25	23.5	94	25	22.9	92	3	63-119/12
75-65-0	Tert Butyl Alcohol	ND		250	197	79	250	196	78	1	45-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		25	26.4	106	25	25.6	102	3	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		25	25.2	101	25	24.1	96	4	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		25	24.0	96	25	23.9	96	0	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		25	24.8	99	25	24.1	96	3	70-119/13
87-61-6	1,2,3-Trichlorobenzene	ND		25	26.9	108	25	26.6	106	1	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		25	23.4	94	25	23.5	94	0	61-124/16
120-82-1	1,2,4-Trichlorobenzene	ND		25	26.6	106	25	26.4	106	1	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		25	28.0	112	25	27.4	110	2	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		25	28.0	112	25	27.0	108	4	66-119/15
127-18-4	Tetrachloroethylene	ND		25	26.5	106	25	25.5	102	4	72-132/14
108-88-3	Toluene	ND		25	27.5	110	25	26.6	106	3	73-119/13
79-01-6	Trichloroethylene	ND		25	26.2	105	25	25.1	100	4	73-121/13
75-69-4	Trichlorofluoromethane	ND		25	29.0	116	25	28.3	113	2	46-152/25
75-01-4	Vinyl chloride	ND		25	30.2	121	25	30.3	121	0	54-126/17
1330-20-7	Xylene (total)	ND		75	80.1	107	75	77.2	103	4	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD6156-6	Limits
1868-53-7	Dibromofluoromethane	100%	99%	99%	72-122%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6156-6MS	G0274625.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6MSD	G0274626.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6	G0274617.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Surrogate Recoveries	MS	MSD	TD6156-6	Limits
17060-07-0	1,2-Dichloroethane-D4	95%	95%	94%	68-124%
2037-26-5	Toluene-D8	102%	102%	102%	80-119%
460-00-4	4-Bromofluorobenzene	99%	99%	98%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6115-1MS	G0274686.D	5	07/17/17	ZQ	n/a	n/a	VG2383
TD6115-1MSD	G0274687.D	5	07/17/17	ZQ	n/a	n/a	VG2383
TD6115-1 [a]	G0274684.D	5	07/17/17	ZQ	n/a	n/a	VG2383

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2

CAS No.	Compound	TD6115-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
75-35-4	1,1-Dichloroethylene	36.5		125	172	108	125	173	109	1	67-140/18
79-01-6	Trichloroethylene	238		125	360	98	125	363	100	1	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD6115-1	Limits
1868-53-7	Dibromofluoromethane	100%	100%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	96%	96%	98%	68-124%
2037-26-5	Toluene-D8	103%	102%	102%	80-119%
460-00-4	4-Bromofluorobenzene	99%	98%	98%	72-126%

(a) AZ:D2

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Southeast)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD6115

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City / State / Zip: Houston TX 77036
Project Contact / E-mail: anita.patel@sgs.com
Phone # / Fax #: 713-271-4700
Sampler(s) Name(s) / Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City / State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet): V8260SIMDIOX

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	ISCO-1-D-98-071117		7/11/17	7:05:00 AM		AQ										X	
2	ISCO-1-S-85-071117		7/11/17	8:15:00 AM		AQ										X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 7/19/2017

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	7/12/17 1800	1 FED EX	2 FED EX		2 07/13/17 930
3		3	4		4
5		5			

Custody Seal # ☐ Intact ☐ Not intact | Preserved where applicable ☐ | On Ice ☐ | Cooler Temp. 3.0

7.1

7

TD6115: Chain of Custody
Page 1 of 2
SGS Accutest Southeast

SGS Accutest Sample Receipt Summary

Job Number: TD6115 **Client:** ALGC-TX **Project:** PLYMOUTH TUBE

Date / Time Received: 7/13/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 5642 4620 9623

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☑	☐
2. Trip Blank listed on COC	☐	☑	☐
	W	**S**	**N/A**
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☑	☐
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 7/13/2017 9:30:00 AM Reviewer: P.H Date: 7/13/2017

7.1

7

TD6115: Chain of Custody
Page 2 of 2

GC/MS Volatiles

QC Data Summaries

(SGS Accutest Southeast)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD6115
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1772-MB	Z47019.D	1	07/14/17	DP	n/a	n/a	VZ1772

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD6115-1, TD6115-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	107%	74-125%
2037-26-5	Toluene-D8	101%	88-111%

Blank Spike Summary

Job Number: TD6115
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1772-BS	Z47017.D	1	07/14/17	DP	n/a	n/a	VZ1772

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD6115-1, TD6115-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.6	93	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	105%	74-125%
2037-26-5	Toluene-D8	106%	88-111%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA45756-1MS	Z47035.D	1	07/14/17	DP	n/a	n/a	VZ1772
FA45756-1MSD	Z47036.D	1	07/14/17	DP	n/a	n/a	VZ1772
FA45756-1 [a]	Z47024.D	1	07/14/17	DP	n/a	n/a	VZ1772

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD6115-1, TD6115-2

CAS No.	Compound	FA45756-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	19.5	98	20	21.4	107	9	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA45756-1	Limits
17060-07-0	1,2-Dichloroethane-D4	108%	110%	110%	74-125%
2037-26-5	Toluene-D8	103%	103%	107%	88-111%

(a) Sample was not preserved to a pH < 2.

8.3.1

8

* = Outside of Control Limits.

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e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - Chandler, AZ

128159.002

SGS Accutest Job Number: TD10880

Sampling Date: 10/17/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: 78

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **9**
Section 4: Sample Results **10**
4.1: TD10880-1: PT-3-90-10172017 11
4.2: TD10880-2: PT-3-90-10172017 DUP 18
4.3: TD10880-3: PT-2S-90-10172017 21
4.4: TD10880-4: ERB-101717 28
4.5: TD10880-5: TRIP BLANK 31
Section 5: Misc. Forms **34**
5.1: Arizona Qualifiers 35
5.2: Chain of Custody 36
Section 6: MS Volatiles - QC Data Summaries **41**
6.1: Method Blank Summary 42
6.2: Blank Spike Summary 46
6.3: Blank Spike/Blank Spike Duplicate Summary 47
6.4: Matrix Spike/Matrix Spike Duplicate Summary 50
Section 7: GC Volatiles - QC Data Summaries **51**
7.1: Method Blank Summary 52
7.2: Blank Spike Summary 53
7.3: Matrix Spike Summary 54
7.4: Duplicate Summary 55
Section 8: General Chemistry - QC Data Summaries **56**
8.1: Method Blank and Spike Results Summary 57
8.2: Duplicate Results Summary 58
8.3: Matrix Spike Results Summary 59
Section 9: Misc. Forms (SGS Accutest Southeast) **60**
9.1: Chain of Custody 61
Section 10: MS Volatiles - QC Data (SGS Accutest Southeast) **63**
10.1: Method Blank Summary 64
10.2: Blank Spike Summary 66
10.3: Matrix Spike/Matrix Spike Duplicate Summary 68
Section 11: Misc. Forms (SGS Accutest Lafayette) **70**
11.1: Chain of Custody 71
Section 12: Metals Analysis - QC Data (SGS Accutest Lafayette) **73**
12.1: Prep QC MP9515: Fe,Na 74

SGS Accutest

Sample Summary

Haley & Aldrich

Job No: TD10880

Plymouth Tube Groundwater Monitoring - Chandler, AZ
Project No: 128159.002

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD10880-1	10/17/17	09:30		10/18/17	AQ	Ground Water	PT-3-90-10172017
TD10880-2	10/17/17	09:40		10/18/17	AQ	Ground Water	PT-3-90-10172017 DUP
TD10880-3	10/17/17	11:10		10/18/17	AQ	Ground Water	PT-2S-90-10172017
TD10880-4	10/17/17	10:15		10/18/17	AQ	Ground Water	ERB-101717
TD10880-5	10/17/17	00:00		10/18/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD10880
Site:	Plymouth Tube Groundwater Monitoring - Chandler, AZ	**Report Date**	10/26/2017 5:23:23 P

4 Sample(s) collected on 10/17/2017 and received intact at Accutest on 10/18/2017 and properly preserved in 1 cooler at 1.4 Deg C. The samples received an Accutest job number of TD10880. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1835

- All data for batch F:MS38619 was analyzed at SGS Accutest, Fl.

Matrix: AQ **Batch ID:** F:VZ1836

- All data for batch F:MS38619 was analyzed at SGS Accutest, Fl.

MS Volatiles By Method SW846 8260C

Matrix: AQ	Batch ID: VZ5455

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- VZ5455-BSD: Insufficient sample available for MS/MSD. AZ:Q9
- TD10880-5 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for Tetrachloroethylene: AZ:E4
- TD10880-5 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-5 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-1 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-1 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-1 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for Chloroform: AZ:E4
- TD10880-3 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-4 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-4 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-4 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-2 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-2 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-2 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for 1,1-Dichloroethane: AZ:E4
- TD10880-3 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

Matrix: AQ	Batch ID: VZ5456

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD10880-3MS, TD10880-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- TD10880-3 for Trichloroethylene: AZ:D2

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ	Batch ID: GSS811

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD10587-5MS, TD10625-4DUP were used as the QC samples indicated.

Metals Analysis By Method SW846 6010C

Matrix: AQ	Batch ID: L:MP9515

- All data for batch L:MP9515 was analyzed at SGS Accutest, La.

General Chemistry By Method EPA 300

Matrix: AQ	Batch ID: GP44708

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD10799-1DUP, TD10799-1MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 2320B-2011

Matrix: AQ	Batch ID: GN85356

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) LA38089-5DUP, LA38089-5MS were used as the QC samples for Alkalinity, Total as CaCO3.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ	Batch ID: GN85487

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD10880-1DUP, TD10880-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD10880-1, TD10880-3 Sample received and analyzed out of holding time. Analysis performed as per client request.

General Chemistry By Method SM 4500 CO2 D

Matrix: AQ	Batch ID: GN85399

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) LA38130-1DUP were used as the QC samples for Alkalinity, Bicarbonate.

General Chemistry By Method SM18 2320B

Matrix: AQ	Batch ID: GN85400

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) LA38130-1DUP were used as the QC samples for Alkalinity, Carbonate.

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job No**	TD10880
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, A	**Report Date**	10/25/2017 2:09:46 P

2 samples, 0 trip blanks and 0 field blanks were collected on 10/17/2017 and were received intact at Accutest on 10/18/2017, properly preserved and cool at 2.5 Deg C. These Samples received an Accutest job number of TD10880. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP9515

- Sample(s) TD10880-1MS, TD10880-1MSD, TD10880-1SDL were used as the QC samples for metals.
- Matrix Spike/ Duplicate Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS Accutest Gulf Coast **Job No:** TD10880

Site: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ **Report Date:** 10/26/2017 12:41:28

2 Sample(s) were collected on 10/17/2017 and were received at SGS Accutest Southeast (SASE) on 10/20/2017 properly preserved, at 3.2 Deg. C and intact. These Samples received an SASE job number of TD10880. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1835

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA48606-4MS, FA48606-4MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VZ1836

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA48606-8MS, FA48606-8MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: TD10880
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Collected: 10/17/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD10880-1	**PT-3-90-10172017**					
1,4-Dioxane [a]		11.0	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		20.8	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		169	1.0	0.30	ug/l	SW846 8260C
Iron [b]		155	100		ug/l	SW846 6010C
Sodium [b]		476000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		1250	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		325	5.0		mg/l	SM 2320B-2011
Chloride		656	25		mg/l	EPA 300
Sulfate		367	30		mg/l	EPA 300
TD10880-2	**PT-3-90-10172017 DUP**					
1,1-Dichloroethylene		20.7	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		165	1.0	0.30	ug/l	SW846 8260C
TD10880-3	**PT-2S-90-10172017**					
1,4-Dioxane [a]		41.0	1.0	0.30	ug/l	SW846 8260B BY SIM
Chloroform [c]		0.43 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [c]		0.63 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene		104	1.0	0.30	ug/l	SW846 8260C
Tetrachloroethylene [c]		0.53 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [d]		585	10	3.0	ug/l	SW846 8260C
Sodium [b]		465000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		1110	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		310	5.0		mg/l	SM 2320B-2011
Chloride		712	25		mg/l	EPA 300
Sulfate		390	30		mg/l	EPA 300

TD10880-4 **ERB-101717**

No hits reported in this sample.

TD10880-5 **TRIP BLANK**

No hits reported in this sample.

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(c) AZ:E4
(d) AZ:D2

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59717.D	1	10/21/17 04:09	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	20.8	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	169	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	99%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z48900.D	1	10/24/17 16:50	AFL	n/a	n/a	F:VZ1835
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	11.0	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		74-125%
2037-26-5	Toluene-D8	106%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018460.D	1	10/20/17 09:19	LT	n/a	n/a	GSS811
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	155	100	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	476000	500	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9545
(2) Prep QC Batch: L:MP9515

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	1250	5.0	mg/l	1	10/20/17 14:20	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	10/20/17 14:20	PA	SM18 2320B
Alkalinity, Total as CaCO3	325	5.0	mg/l	1	10/19/17 15:40	PA	SM 2320B-2011
Chloride	656	25	mg/l	50	10/23/17 17:01	SM	EPA 300
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	10/25/17 12:15	PA	SM 3500FE B-2011
Sulfate	367	30	mg/l	50	10/23/17 17:01	SM	EPA 300

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-10172017 DUP		
Lab Sample ID:	TD10880-2	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59720.D	1	10/21/17 05:22	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	20.7	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017 DUP		
Lab Sample ID:	TD10880-2	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	165	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	98%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017 DUP		
Lab Sample ID:	TD10880-2	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59718.D	1	10/21/17 04:34	ZQ	n/a	n/a	VZ5455
Run #2	Z59739.D	10	10/23/17 11:38	ZQ	n/a	n/a	VZ5456

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.43	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.63	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	104	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [b]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [a]	0.53	1.0	0.30	ug/l	J
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene [c]	585 [d]	10	3.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [b]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	109%	68-124%
2037-26-5	Toluene-D8	98%	97%	80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%	101%	72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
(c) AZ:D2
(d) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z48918.D	1	10/25/17 13:55	AFL	n/a	n/a	F:VZ1836
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	41.0	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	96%		74-125%
2037-26-5	Toluene-D8	108%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018461.D	1	10/20/17 09:34	LT	n/a	n/a	GSS811
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	465000	500	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9545
(2) Prep QC Batch: L:MP9515

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	1110	5.0	mg/l	1	10/20/17 14:20	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	10/20/17 14:20	PA	SM18 2320B
Alkalinity, Total as CaCO3	310	5.0	mg/l	1	10/19/17 15:40	PA	SM 2320B-2011
Chloride	712	25	mg/l	50	10/23/17 17:18	SM	EPA 300
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	10/25/17 12:15	PA	SM 3500FE B-2011
Sulfate	390	30	mg/l	50	10/23/17 17:18	SM	EPA 300

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ERB-101717		
Lab Sample ID:	TD10880-4	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59719.D	1	10/21/17 04:58	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-101717		
Lab Sample ID:	TD10880-4	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	97%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-101717		
Lab Sample ID:	TD10880-4	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD10880-5	**Date Sampled:**	10/17/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59716.D	1	10/21/17 03:45	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD10880-5	**Date Sampled:**	10/17/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	95%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD10880-5	**Date Sampled:**	10/17/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
V9	CCV recovery was below method acceptance limits.

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

pg 1 of 1

FED-EX Tracking # 7705 2244 7643
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: TD10880

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E. Van Buren
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: Lance S Hensel

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-002
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B - VOC	8260B SIM - 1,4-Dioxane	EPA 300 - Sulfate	SW 846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron	RSK 175 - Methane, ethane, ethene	2320B - Alkalinity	EPA 300 - Chloride	6010/6020 - Sodium			LAB USE ONLY
1	PT-3-90-10172017	10-17-17	0930	LP/SH	GW	14	8		3		3				X	X	X	X	X	X	X	X	X			
2	PT-3-90-10172017 DUP		0940			3	3								X											
3	PT-25-90-10172017		1110			14	8		3		3				X	X	X	X	X	X	X	X	X			
4	ERB-101717		1015			3	3								X											
5	Trip Blank					2	2								X											

Matrix Codes
WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
Ol-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

Turnaround Time (Business days)
- 10 Day
- 5 Day
- 3 Day
- 2 Day
- 1 Day
- Same Day

Approved By:/ Date:

Emergency T/A data available VIA Lablink

Data Deliverable Information
- Commercial "A" - Results only
- Commercial "B" - Results with QC summaries
- Commerical "B+" - Results, QC, and chromatograms
- FULT1 - Level 4 data package
- EDF for Geotracker — EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		10/17/17 11:30	1 Ashley Grum	2 Ashley Grum	10/17/17 1600	2 Fed Ex
3	FEDEX	10/18/17 1015	3 [illegible]	4		4
5			5			

Custody Seal #
Appropriate Bottle / Pres (Y) / N
Headspace Y / (N)
On Ice (Y) / N
Labels match Coc (Y) / N
Separate Receiving Check List used: (Y) N
Cooler Temp. 1.4 oC

5.2 5

TD10880: Chain of Custody
Page 1 of 5

SGS ACCUTEST

COOLER TEMP FORM

~~TC#~~ TD10880

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 10/18/17

Client: HALEY & ALDRICH

Cooler Number: 1

Thermometer ID: TRE CF, °C 0.0 Corrected Temp, °C 1.4

1 & 3

3-250ml HNO3

3-250ml NP

6-40ml HCL

2-40ml HCL

2 & 4

3-40ml HCL

5 - FB

ACCUTEST

Date 10/17/17

ORIGIN ID:MSCA (480) 275-8931
ASHLEY LOCUM
ACCUTEST TEMPE SERVICE CENTER
1741 W. UNIVERSITY DR.
SUITE 149
TEMPE, AZ 85281
UNITED STATES US

TO SAMPLE RECEIVING
ACCUTEST LABORATORIES
10165 HARWIN DR.
SUITE 150
HOUSTON TX 77071
(713) 271-4700 REF: CLEARCREEK/HALEYALDRICH
INV:
PO: DEPT:

549J4/94F

FedEx Express

E

WED - 18 OCT 10:30A
PRIORITY OVERNIGHT
DSR
77071
TX-US iAH

TRK# 0201 7705 2244 7643

AB SGRA

TD10880: Chain of Custody
Page 2 of 5

SGS Accutest Sample Receipt Summary

Job Number: TD10880 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: **Delivery Method:** **Airbill #'s:** 770522447643

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (1.4/1.4);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑	☐	☐	☑	☐
2. Trip Blank listed on COC:	☑	☐	☐		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Sample Receipt Log

Job #: TD10880 **Date / Time Received:** 10/18/2017 10:15:00 AM **Initials:** RE

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD10880-1	250ml	1	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	250ml	2	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	250ml	3	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	250ml	4	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-1	250ml	5	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-1	250ml	6	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	7	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	40ml	8	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	12	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	13	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	14	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	250ml	1	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	250ml	2	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	250ml	3	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	250ml	4	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-3	250ml	5	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-3	250ml	6	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4

Sample Receipt Log

Job #: TD10880 **Date / Time Received:** 10/18/2017 10:15:00 AM **Initials:** RE

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD10880-3	40ml	7	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	40ml	8	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	12	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	13	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	14	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-MB	Z59715.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-MB	Z59715.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	104%	68-124%

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-MB	Z59715.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	105%	72-126%

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5456-MB	Z59738.D	1	10/23/17	ZQ	n/a	n/a	VZ5456

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-3

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	105%	68-124%
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	100%	72-126%

Blank Spike Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5456-BS	Z59736.D	1	10/23/17	ZQ	n/a	n/a	VZ5456

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
79-01-6	Trichloroethylene	25	19.1	76	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	98%	68-124%
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-BS	Z59711.D	1	10/21/17	ZQ	n/a	n/a	VZ5455
VZ5455-BSD [a]	Z59712.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	125	106	85	106	85	0	46-129/30
71-43-2	Benzene	25	21.6	86	22.1	88	2	68-119/30
108-86-1	Bromobenzene	25	23.2	93	22.5	90	3	71-119/30
74-97-5	Bromochloromethane	25	21.0	84	21.1	84	0	71-118/30
75-27-4	Bromodichloromethane	25	22.3	89	22.1	88	1	72-118/30
75-25-2	Bromoform	25	21.6	86	21.8	87	1	54-123/30
104-51-8	n-Butylbenzene	25	23.4	94	23.2	93	1	66-123/30
135-98-8	sec-Butylbenzene	25	24.9	100	25.2	101	1	72-123/30
98-06-6	tert-Butylbenzene	25	24.6	98	24.1	96	2	70-124/30
108-90-7	Chlorobenzene	25	22.4	90	22.7	91	1	74-120/30
75-00-3	Chloroethane	25	23.8	95	23.8	95	0	61-132/30
67-66-3	Chloroform	25	20.5	82	20.9	84	2	73-122/30
95-49-8	o-Chlorotoluene	25	23.3	93	23.3	93	0	71-122/30
106-43-4	p-Chlorotoluene	25	23.7	95	23.5	94	1	73-120/30
75-15-0	Carbon disulfide	25	21.9	88	21.7	87	1	55-140/30
56-23-5	Carbon tetrachloride	25	23.4	94	23.5	94	0	68-133/30
75-34-3	1,1-Dichloroethane	25	22.2	89	22.1	88	0	72-121/30
75-35-4	1,1-Dichloroethylene	25	22.7	91	22.1	88	3	67-140/30
563-58-6	1,1-Dichloropropene	25	21.1	84	20.8	83	1	73-130/30
96-12-8	1,2-Dibromo-3-chloropropane	25	23.3	93	22.8	91	2	47-133/30
106-93-4	1,2-Dibromoethane	25	23.3	93	24.0	96	3	69-121/30
107-06-2	1,2-Dichloroethane	25	23.4	94	22.1	88	6	68-121/30
78-87-5	1,2-Dichloropropane	25	22.0	88	22.7	91	3	72-116/30
142-28-9	1,3-Dichloropropane	25	21.7	87	22.5	90	4	70-118/30
594-20-7	2,2-Dichloropropane	25	19.9	80	20.0	80	1	57-141/30
124-48-1	Dibromochloromethane	25	23.1	92	23.0	92	0	68-119/30
75-71-8	Dichlorodifluoromethane	25	17.4	70	16.1	64	8	29-182/30
156-59-2	cis-1,2-Dichloroethylene	25	21.9	88	22.2	89	1	72-117/30
10061-01-5	cis-1,3-Dichloropropene	25	21.3	85	21.0	84	1	71-118/30
541-73-1	m-Dichlorobenzene	25	23.2	93	22.8	91	2	73-117/30
95-50-1	o-Dichlorobenzene	25	22.7	91	22.7	91	0	71-117/30
106-46-7	p-Dichlorobenzene	25	21.9	88	22.3	89	2	71-116/30
156-60-5	trans-1,2-Dichloroethylene	25	22.4	90	22.2	89	1	68-124/30
10061-02-6	trans-1,3-Dichloropropene	25	22.4	90	22.8	91	2	72-127/30
100-41-4	Ethylbenzene	25	23.4	94	23.7	95	1	71-117/30
637-92-3	Ethyl tert-Butyl Ether	25	20.8	83	21.2	85	2	66-122/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-BS	Z59711.D	1	10/21/17	ZQ	n/a	n/a	VZ5455
VZ5455-BSD [a]	Z59712.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	125	121	97	119	95	2	49-124/30
87-68-3	Hexachlorobutadiene	25	24.3	97	24.2	97	0	62-143/30
98-82-8	Isopropylbenzene	25	26.5	106	26.6	106	0	74-141/30
99-87-6	p-Isopropyltoluene	25	24.0	96	23.9	96	0	72-126/30
108-10-1	4-Methyl-2-pentanone	125	116	93	113	90	3	54-122/30
74-83-9	Methyl bromide	25	19.6	78	20.2	81	3	53-138/30
74-87-3	Methyl chloride	25	16.9	68	17.6	70	4	50-145/30
74-95-3	Methylene bromide	25	22.9	92	22.9	92	0	71-117/30
75-09-2	Methylene chloride	25	22.7	91	21.9	88	4	60-125/30
78-93-3	Methyl ethyl ketone	125	117	94	116	93	1	51-129/30
1634-04-4	Methyl Tert Butyl Ether	25	21.7	87	22.0	88	1	65-119/30
91-20-3	Naphthalene	25	27.6	110	27.3	109	1	43-139/30
103-65-1	n-Propylbenzene	25	23.7	95	23.3	93	2	72-123/30
100-42-5	Styrene	25	23.8	95	24.7	99	4	74-119/30
75-65-0	Tert Butyl Alcohol	250	231	92	223	89	4	35-146/30
630-20-6	1,1,1,2-Tetrachloroethane	25	24.5	98	24.0	96	2	74-119/30
71-55-6	1,1,1-Trichloroethane	25	22.8	91	22.9	92	0	72-129/30
79-34-5	1,1,2,2-Tetrachloroethane	25	22.9	92	22.6	90	1	62-121/30
79-00-5	1,1,2-Trichloroethane	25	21.7	87	22.6	90	4	70-119/30
87-61-6	1,2,3-Trichlorobenzene	25	25.1	100	25.1	100	0	44-144/30
96-18-4	1,2,3-Trichloropropane	25	23.6	94	22.4	90	5	61-124/30
120-82-1	1,2,4-Trichlorobenzene	25	24.6	98	24.3	97	1	57-132/30
95-63-6	1,2,4-Trimethylbenzene	25	23.4	94	23.5	94	0	70-121/30
108-67-8	1,3,5-Trimethylbenzene	25	24.6	98	24.6	98	0	66-119/30
127-18-4	Tetrachloroethylene	25	24.6	98	25.0	100	2	72-132/30
108-88-3	Toluene	25	22.4	90	22.7	91	1	73-119/30
79-01-6	Trichloroethylene	25	23.1	92	22.7	91	2	73-121/30
75-69-4	Trichlorofluoromethane	25	21.1	84	20.3	81	4	46-152/30
75-01-4	Vinyl chloride	25	16.8	67	16.9	68	1	54-126/30
1330-20-7	Xylene (total)	75	70.5	94	71.8	96	2	74-119/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	95%	97%	72-122%
17060-07-0	1,2-Dichloroethane-D4	97%	96%	68-124%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-BS	Z59711.D	1	10/21/17	ZQ	n/a	n/a	VZ5455
VZ5455-BSD [a]	Z59712.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
2037-26-5	Toluene-D8	100%	100%	80-119%
460-00-4	4-Bromofluorobenzene	101%	100%	72-126%

(a) Insufficient sample available for MS/MSD. AZ:Q9

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10880-3MS	Z59740.D	10	10/23/17	ZQ	n/a	n/a	VZ5456
TD10880-3MSD	Z59741.D	10	10/23/17	ZQ	n/a	n/a	VZ5456
TD10880-3	Z59739.D	10	10/23/17	ZQ	n/a	n/a	VZ5456

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-3

CAS No.	Compound	TD10880-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	585		250	837	101	250	789	82	6	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD10880-3	Limits
1868-53-7	Dibromofluoromethane	95%	95%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	100%	98%	109%	68-124%
2037-26-5	Toluene-D8	99%	97%	97%	80-119%
460-00-4	4-Bromofluorobenzene	100%	99%	101%	72-126%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS811-MB	SS018450.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS811-BS	SS018448.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	17.2	80	68-139
74-85-1	Ethene	57.4	45.3	79	52-145
74-84-0	Ethane	43.3	42.3	98	68-131

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10587-5MS	SS018456.D	1	10/20/17	LT	n/a	n/a	GSS811
TD10587-5	SS018455.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	TD10587-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	11.0		21.5	27.9	79	68-139
74-85-1	Ethene	ND		57.4	47.0	82	52-145
74-84-0	Ethane	ND		43.3	44.5	103	68-131

* = Outside of Control Limits.

Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10625-4DUP	SS018459.D	1	10/20/17	LT	n/a	n/a	GSS811
TD10625-4	SS018458.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	TD10625-4 ug/l	Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	ND		ND		nc	53
74-85-1	Ethene	ND		ND		nc	27
74-84-0	Ethane	ND		ND		nc	43

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD10880
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate	GN85399	5.0	1.0	mg/l				
Alkalinity, Carbonate	GN85400	5.0	0.0	mg/l				
Alkalinity, Total as CaCO3	GN85356	5.0	0.0	mg/l	100	93.0	93.0	90-100%
Chloride	GP44708/GN85454	0.50	0.0	mg/l	10	9.55	95.5	90-110%
Iron, Ferrous	GN85487	0.10	-0.0080	mg/l	4	4.0	101.0	94-103%
Sulfate	GP44708/GN85454	0.60	0.0	mg/l	10	9.79	97.9	90-110%

Associated Samples:
Batch GN85356: TD10880-1, TD10880-3
Batch GN85399: TD10880-1, TD10880-3
Batch GN85400: TD10880-1, TD10880-3
Batch GN85487: TD10880-1, TD10880-3
Batch GP44708: TD10880-1, TD10880-3
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD10880
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Bicarbonate	GN85399	LA38130-1	mg/l	470	470	0.0	0-10%
Alkalinity, Carbonate	GN85400	LA38130-1	mg/l	0.0	0.0	0.0	0-20%
Alkalinity, Total as CaCO3	GN85356	LA38089-5	mg/l	610	610	0.0	0-10%
Chloride	GP44708/GN85454	TD10799-1	mg/l	0.78	0.77	1.3	0-20%
Iron, Ferrous	GN85487	TD10880-1	mg/l	0.085	0.085	0.0	0-10%
Sulfate	GP44708/GN85454	TD10799-1	mg/l	0.0	0.0	0.0	0-20%

Associated Samples:
Batch GN85356: TD10880-1, TD10880-3
Batch GN85399: TD10880-1, TD10880-3
Batch GN85400: TD10880-1, TD10880-3
Batch GN85487: TD10880-1, TD10880-3
Batch GP44708: TD10880-1, TD10880-3
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD10880
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN85356	LA38089-5	mg/l	610	25	635	100.0	75-117%
Chloride	GP44708/GN85454	TD10799-1	mg/l	0.78	10	9.9	91.2	80-120%
Iron, Ferrous	GN85487	TD10880-1	mg/l	0.085	4	4.1	101.0	89-106%
Sulfate	GP44708/GN85454	TD10799-1	mg/l	0.0	10	9.7	97.0	80-120%

Associated Samples:
Batch GN85356: TD10880-1, TD10880-3
Batch GN85487: TD10880-1, TD10880-3
Batch GP44708: TD10880-1, TD10880-3
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Southeast)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD10880

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: Trameshia.Brown@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-10172017		10/17/17	9:30:00 AM		AQ	3	x								X	
3	PT-25-90-10172017		10/17/17	11:10:00 AM		AQ	3	x								X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 10/25/2017

Emergency & Rush TAT data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions: fL

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Tir	Received By:	Relinquished By:	Date Time:	Received By:
1	1010	1 No	2		2 10/20/17 900
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp. 3.2

91

9

TD10880: Chain of Custody
Page 1 of 2
SGS Accutest Southeast

SGS Accutest Sample Receipt Summary

Job Number: TD10880 **Client:** ALGC **Project:** PLYMOUTH TUBE

Date / Time Received: 10/20/2017 9:00:00 AM **Delivery Method:** FED EX **Airbill #'s:** 1001891712860003281100564246213589

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 10/20/2017 9:00:00 A Reviewer: BR Date: 10/20/2017

9.1

9

TD10880: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

(SGS Accutest Southeast)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1835-MB	Z48882.D	1	10/24/17	MM	n/a	n/a	VZ1835

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-1

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	103%	74-125%
2037-26-5	Toluene-D8	101%	88-111%

Method Blank Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1836-MB	Z48914.D	1	10/25/17	MM	n/a	n/a	VZ1836

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	101%	74-125%
2037-26-5	Toluene-D8	105%	88-111%

Blank Spike Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1835-BS	Z48880.D	1	10/24/17	MM	n/a	n/a	VZ1835

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	20.3	102	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	102%	74-125%
2037-26-5	Toluene-D8	102%	88-111%

10.2.1

10

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1836-BS	Z48912.D	1	10/25/17	MM	n/a	n/a	VZ1836

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	20.5	103	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	100%	74-125%
2037-26-5	Toluene-D8	105%	88-111%

10.2.2

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA48606-4MS	Z48904.D	1	10/24/17	MM	n/a	n/a	VZ1835
FA48606-4MSD	Z48905.D	1	10/24/17	MM	n/a	n/a	VZ1835
FA48606-4	Z48886.D	1	10/24/17	MM	n/a	n/a	VZ1835

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-1

CAS No.	Compound	FA48606-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	38.0		20	57.9	100	20	57.8	99	0	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA48606-4	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	96%	99%	74-125%
2037-26-5	Toluene-D8	105%	105%	102%	88-111%

10.3.1

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA48606-8MS	Z48922.D	1	10/25/17	MM	n/a	n/a	VZ1836
FA48606-8MSD	Z48923.D	1	10/25/17	MM	n/a	n/a	VZ1836
FA48606-8	Z48915.D	1	10/25/17	MM	n/a	n/a	VZ1836

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-3

CAS No.	Compound	FA48606-8 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	36.1		20	56.1	100	20	56.0	100	0	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA48606-8	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	98%	100%	74-125%
2037-26-5	Toluene-D8	107%	107%	107%	88-111%

10.3.2

10

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Lafayette)

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD10880

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: Trameshia.Brown@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE ,NA	LAB USE ONLY
1	PT-3-90-10172017		10/17/17	9:30:00 AM		AQ	3			x						X	3
3	PT-25-90-10172017		10/17/17	11:10:00 AM		AQ	3			x						X	3

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 10/25/2017

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

LA 3W2

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1 [signature]	10/19/17 1600	1 SGS	2 SGS		2 [signature]
3 [signature]	10/19/17 2352	3 [signature] 10-20-17 7:30 am	4		4
5		5	Custody Seal # CS 60	☑ Intact ☐ Not intact	Preserved where applicable ☑ On Ice ☑ Cooler Temp. 2.5 IN 439

11.1

11

TD10880: Chain of Custody
Page 1 of 2
SGS Accutest Lafayette

SGS Accutest Sample Receipt Summary

Job Number: TD10880 **Client:** SGS (TX) **Project:** PLYMOUTH TUBE GROUNDWATER

Date / Time Received: 10/20/2017 7:30:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2.5/2.5); DV439

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV439;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

11.1

11

TD10880: Chain of Custody

Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Accutest Lafayette)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/20/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	14	46		
Antimony	6.0	1.4	3.7		
Arsenic	10	1.9	2.6		
Barium	10	.21	1.3		
Beryllium	4.0	.05	.3		
Boron	100	.95	10		
Cadmium	5.0	.13	.9		
Calcium	100	5.1	58		
Chromium	10	.29	.9		
Cobalt	10	.15	.8		
Copper	10	.43	4		
Iron	100	2.8	33	2.0	<100
Lead	10	.9	1.8		
Lithium	10	1.1	6.3		
Magnesium	100	18	37		
Manganese	10	.05	1.1		
Molybdenum	10	.15	1.1		
Nickel	10	.3	1		
Potassium	500	25	50		
Selenium	10	1.7	3.6		
Silver	10	.32	1.4		
Sodium	500	6.5	53	6.9	<500
Strontium	10	.09	1		
Thallium	5.0	1.3	1.6		
Tin	10	.76	.9		
Titanium	10	.46	1.7		
Vanadium	10	.33	.9		
Zinc	20	.63	4.3		

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/20/17

Metal	TD10880-1 Original	MS	Spikelot ICPSPIKE	1% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	155	1240	1000	108.5	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	anr				
Potassium					
Selenium	anr				
Silver	anr				
Sodium	476000	498000	10000	220.0(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc	anr				

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/20/17

Metal	TD10880-1 Original	MSD	Spikelot ICPSPIKE	1% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	155	1220	1000	106.5	1.6	20
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium	476000	492000	10000	160.0(a)	1.2	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/20/17

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	1020	1000	102.0	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	10300	10000	103.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/20/17

Metal	TD10880-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	155	149	3.6	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	476000	456000	4.3	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-003

128159-003

SGS Accutest Job Number: TD12337

Sampling Date: 11/15/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: 37

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **7**
Section 4: Sample Results **8**
4.1: TD12337-1: PT-3-90-11152017 9
4.2: TD12337-2: PT-2S-90-11152017 12
Section 5: Misc. Forms **15**
5.1: Chain of Custody 16
Section 6: GC Volatiles - QC Data Summaries **20**
6.1: Method Blank Summary 21
6.2: Blank Spike Summary 22
6.3: Matrix Spike Summary 23
6.4: Duplicate Summary 24
Section 7: General Chemistry - QC Data Summaries **25**
7.1: Method Blank and Spike Results Summary 26
7.2: Duplicate Results Summary 27
7.3: Matrix Spike Results Summary 28
Section 8: Misc. Forms (SGS Accutest Lafayette) **29**
8.1: Chain of Custody 30
Section 9: Metals Analysis - QC Data (SGS Accutest Lafayette) **32**
9.1: Prep QC MP9843: Fe,Na 33

SGS Accutest

Sample Summary

Haley & Aldrich

Job No: TD12337

Plymouth Tube Groundwater Monitoring - 128159-003
Project No: 128159-003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD12337-1	11/15/17	09:00		11/16/17	AQ	Ground Water	PT-3-90-11152017
TD12337-2	11/15/17	11:15		11/16/17	AQ	Ground Water	PT-2S-90-11152017

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD12337
Site:	Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	11/28/2017 3:35:31 P

2 Sample(s) collected on 11/15/2017 and received intact at Accutest on 11/16/2017 and properly preserved in 1 cooler at 2.8 Deg C. The samples received an Accutest job number of TD12337. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ **Batch ID:** GSS819

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD12337-1DUP, TD12342-1MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals Analysis By Method SW846 6010C

Matrix: AQ **Batch ID:** L:MP9843

- All data for batch L:MP9843 was analyzed at SGS Accutest, La.

General Chemistry By Method EPA 300.0

Matrix: AQ **Batch ID:** GP45126

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12337-2DUP, TD12337-2MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 2320B-2011

Matrix: AQ **Batch ID:** GN86014

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12337-2DUP, TD12337-2MS were used as the QC samples for Alkalinity, Total as CaCO3.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ **Batch ID:** GN86012

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12337-1DUP, TD12337-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD12337-1, TD12337-2 Sample received and analyzed out of holding time. Analysis performed as per client request.

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job No**	TD12337
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, A	**Report Date**	11/22/2017 3:34:34 P

2 samples, 0 trip blanks and 0 field blanks were collected on 11/15/2017 and were received intact at Accutest on 11/16/2017, properly preserved and cool at 1.6 Deg C. These Samples received an Accutest job number of TD12337. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP9843

- Sample(s) TD11718-2MS, TD11718-2MSD, TD11718-2SDL were used as the QC samples for metals.
- Matrix Spike/ Duplicate Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TD12337
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 11/15/17

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD12337-1	**PT-3-90-11152017**					
Iron [a]		183	100		ug/l	SW846 6010C
Sodium [a]		431000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		339	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		340	5.0		mg/l	SM 2320B-2011
Chloride		538	50		mg/l	EPA 300.0
Sulfate		313	60		mg/l	EPA 300.0
TD12337-2	**PT-2S-90-11152017**					
Sodium [a]		454000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		64.9	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		65.0	5.0		mg/l	SM 2320B-2011
Chloride		597	50		mg/l	EPA 300.0
Sulfate		349	60		mg/l	EPA 300.0

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12337-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018634.D	1	11/17/17 09:58	LT	n/a	n/a	GSS819
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	21 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12337-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	183	100	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	431000	500	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9899
(2) Prep QC Batch: L:MP9843

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12337-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	339	5.0	mg/l	1	11/16/17 16:50	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	11/16/17 16:50	PA	SM18 2320B
Alkalinity, Total as CaCO3	340	5.0	mg/l	1	11/16/17 16:50	PA	SM 2320B-2011
Chloride	538	50	mg/l	100	11/20/17 14:47	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	11/16/17 16:00	PA	SM 3500FE B-2011
Sulfate	313	60	mg/l	100	11/20/17 14:47	ES	EPA 300.0

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12337-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018636.D	1	11/17/17 10:32	LT	n/a	n/a	GSS819
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	21 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12337-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	454000	500	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9899
(2) Prep QC Batch: L:MP9843

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12337-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	64.9	5.0	mg/l	1	11/16/17 16:50	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	11/16/17 16:50	PA	SM18 2320B
Alkalinity, Total as CaCO3	65.0	5.0	mg/l	1	11/16/17 16:50	PA	SM 2320B-2011
Chloride	597	50	mg/l	100	11/20/17 15:03	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	11/16/17 16:00	PA	SM 3500FE B-2011
Sulfate	349	60	mg/l	100	11/20/17 15:03	ES	EPA 300.0

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS

PHOENIX CHAIN OF CUSTODY

ACCUTEST

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

pg 1 of 1

FED-EX Tracking # 7707 6031 2333
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: C TD 12337

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E Van Buren St
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / C Nemanic

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-003
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	EPA300 - Sulfate	SW846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron 45 Am	RSK 175 - Methane filtered ethane, ethene	2320B - Alkalinity	EPA300 - Chloride	6010/6020 - Sodium					LAB USE ONLY
1	PT-3-90-11152017	11-15-17	0900	CP/CN	GW	8	2		3		3				X	X	X	X	X	X	X					
2	PT-25-90-11152017	↓	1115	↓	↓	8	2		3		3				X	X	X	X	X	X	X					

Matrix Codes

WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
OI-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

PAGGED BY: [signature]

VERIFIED BY: [signature]

Turnaround Time (Business days)

Approved By:/ Date:

- [ ] 10 Day
- [x] 5 Day Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/15/17 13:40	1 Ashley Tocum	2 Ashley Tocum	11/15/17 1600	2 Fed Ex
Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3 Fed Ex	11/16/17 0945	3 [signature] 11/16/17 0945	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Appropriate Bottle / Pres. Y / N	Headspace Y / N On Ice Y / N
5		5		Labels match Coc? Y / N	Separate Receiving Check List used Y / N

Cooler Temp. 2.8 oC

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TD12337: Chain of Custody
Page 1 of 4

ACCUTEST

COOLER TEMP FORM

~~TC#~~ TD12337

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 11-16-17

Client: HALEY ADRIAN

Cooler Number: 1

Thermometer ID: 029 CF, °C 0 Corrected Temp, °C 2.8

SAMPLES CONTAINED IN COOLER

Fed # 770760312333

3- 250ml NP

3- 250ml HNO3

2- 40ml HCl

ADING INSPECTION.
IPANY.

Form: SM027-06 Rev 10/24/2016

5.1 5

TD12337: Chain of Custody

Page 2 of 4

SGS Accutest Sample Receipt Summary

Job Number: TD12337 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUB

Date / Time Received: 11/16/2017 9:45:00 AM **Delivery Method:** **Airbill #'s:** 770760312333

No. Coolers: 1 **Therm ID:** IR9; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2.8/2.8);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☐	☑	☐	☐
2. Trip Blank listed on COC:	☐	☐	☑		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

5.1

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TD12337: Chain of Custody

Page 3 of 4

Sample Receipt Log

Job #: TD12337 **Date / Time Received:** 11/16/2017 9:45:00 AM 9:45: **Initials:** RE

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD12337-1	250ml	1	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-1	250ml	2	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-1	250ml	3	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-1	250ml	4	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	250ml	5	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	250ml	6	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	40ml	7	1C	HCL	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	40ml	8	1C	HCL	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	250ml	1	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-2	250ml	2	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-2	250ml	3	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-2	250ml	4	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	250ml	5	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	250ml	6	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	40ml	7	1C	HCL	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	40ml	8	1C	HCL	pH < 2	IR9	2.8	0	2.8

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS819-MB	SS018629.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1, TD12337-2

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS819-BS	SS018627.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1, TD12337-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.4	100	68-139
74-85-1	Ethene	57.4	56.7	99	52-145
74-84-0	Ethane	43.3	52.0	120	68-131

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD12342-1MS	SS018640.D	1	11/17/17	LT	n/a	n/a	GSS819
TD12342-1	SS018639.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1, TD12337-2

CAS No.	Compound	TD12342-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	ND		21.5	16.9	79	68-139
74-85-1	Ethene	ND		57.4	43.4	76	52-145
74-84-0	Ethane	ND		43.3	40.2	93	68-131

* = Outside of Control Limits.

Duplicate Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD12337-1DUP	SS018635.D	1	11/17/17	LT	n/a	n/a	GSS819
TD12337-1	SS018634.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1

CAS No.	Compound	TD12337-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	ND		ND		nc	53
74-85-1	Ethene	ND		ND		nc	27
74-84-0	Ethane	ND		ND		nc	43

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD12337
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN86014	5.0	0.0	mg/l	100	92.0	92.0	90-100%
Chloride	GP45126/GN86083	0.50	0.0	mg/l	10	9.72	97.2	90-110%
Iron, Ferrous	GN86012	0.10	0.0	mg/l	4	4.0	100.0	94-103%
Sulfate	GP45126/GN86083	0.60	0.0	mg/l	10	9.63	96.3	90-110%

Associated Samples:
Batch GN86012: TD12337-1, TD12337-2
Batch GN86014: TD12337-1, TD12337-2
Batch GP45126: TD12337-1, TD12337-2
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD12337
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN86014	TD12337-2	mg/l	65.0	65.0	0.0	0-10%
Chloride	GP45126/GN86083	TD12337-2	mg/l	597	647	8.0	0-20%
Iron, Ferrous	GN86012	TD12337-1	mg/l	0.0	0.0	0.0	0-10%
Sulfate	GP45126/GN86083	TD12337-2	mg/l	349	342	2.0	0-20%

Associated Samples:
Batch GN86012: TD12337-1, TD12337-2
Batch GN86014: TD12337-1, TD12337-2
Batch GP45126: TD12337-1, TD12337-2
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD12337
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN86014	TD12337-2	mg/l	65.0	25	87.0	88.0	75-117%
Chloride	GP45126/GN86083	TD12337-2	mg/l	597	1000	1530	93.3	80-120%
Iron, Ferrous	GN86012	TD12337-1	mg/l	0.0	4	4.0	100.0	89-106%
Sulfate	GP45126/GN86083	TD12337-2	mg/l	349	1000	1240	89.1	80-120%

Associated Samples:
Batch GN86012: TD12337-1, TD12337-2
Batch GN86014: TD12337-1, TD12337-2
Batch GP45126: TD12337-1, TD12337-2
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Lafayette)

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD12337

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE ,NA ,	LAB USE ONLY
1	PT-3-90-11152017		11/15/17	9:00:00 AM		AQ	1			X						X	
2	PT-25-90-11152017		11/15/17	11:15:00 AM		AQ	1			X						X	

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/23/2017

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

LA

(BW2)

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 S. James	11-16-17 1800	1 SGS	2		2 [signature]
3 [signature]	11-16-17 2300	3 [signature] 11-17-17 0750	4		4
5		5	Custody Seal # CS ON COOL ☑ Intact ☐ Not intact	Preserved where applicable ☑	On Ice ☑ Cooler Temp. (1.6 on 4.1)

8.1

8

TD12337: Chain of Custody
Page 1 of 2
SGS Accutest Lafayette

SGS Accutest Sample Receipt Summary

Job Number: TD12337 **Client:** SGS (TX) **Project:** PLYMOUTH TUBE GW

Date / Time Received: 11/17/2017 7:50:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.6/1.6); DV441

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV441;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

8.1

8

TD12337: Chain of Custody

Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Accutest Lafayette)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	10	46		
Antimony	6.0	1.5	3.7		
Arsenic	10	1.5	2.6		
Barium	10	.25	1.3		
Beryllium	4.0	.04	.3		
Boron	100	1.4	10		
Cadmium	5.0	.13	.9		
Calcium	100	5.9	58		
Chromium	10	.35	.9		
Cobalt	10	.15	.8		
Copper	10	.98	4		
Iron	100	4.3	33	-0.30	<100
Lead	10	.79	1.8		
Lithium	10	2	6.3		
Magnesium	100	19	37		
Manganese	10	3.6	1.1		
Molybdenum	10	.19	1.1		
Nickel	10	.67	1		
Potassium	500	37	50		
Selenium	10	1.7	3.6		
Silver	10	.42	1.4		
Sodium	500	89	53	-88	<500
Strontium	10	.08	1		
Thallium	5.0	1.4	1.6		
Tin	10	.51	.9		
Titanium	10	.34	1.7		
Vanadium	10	.28	.9		
Zinc	20	9.9	4.3		

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	TD11718-2 Original	MS	Spikelot ICPSPIKE	1% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	303	1180	1000	87.7	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	anr				
Potassium					
Selenium	anr				
Silver	anr				
Sodium	1250000	1210000	10000	-400.0(a	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc	anr				

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 11/17/17

Metal	TD11718-2 Original	MSD	Spikelot ICPSPIKE1%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	303	1230	1000	92.7	4.1	20
Lead	anr					
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium	1250000	1270000	10000	200.0(a)	4.8	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	976	1000	97.6	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	9770	10000	97.7	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	TD11718-2 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	303	287	5.3	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	1250000	1370000	9.5	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-002

128159.002

SGS Accutest Job Number: TD12350

Sampling Date: 11/15/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: 54

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **7**
Section 4: Sample Results **8**
4.1: TD12350-1: PT-3D-126-11152017 9
4.2: TD12350-2: PT-3-90-11152017 13
4.3: TD12350-3: PT-1S-90-11152017 17
4.4: TD12350-4: PT-2S-90-11152017 21
4.5: TD12350-5: ERB-11152017 25
4.6: TD12350-6: TRIP BLANK 28
Section 5: Misc. Forms **31**
5.1: Arizona Qualifiers 32
5.2: Chain of Custody 33
Section 6: MS Volatiles - QC Data Summaries **38**
6.1: Method Blank Summary 39
6.2: Blank Spike Summary 43
6.3: Blank Spike/Blank Spike Duplicate Summary 44
6.4: Matrix Spike/Matrix Spike Duplicate Summary 47
Section 7: Misc. Forms (SGS Accutest Southeast) **48**
7.1: Chain of Custody 49
Section 8: MS Volatiles - QC Data (SGS Accutest Southeast) **51**
8.1: Method Blank Summary 52
8.2: Blank Spike Summary 53
8.3: Matrix Spike/Matrix Spike Duplicate Summary 54

SGS Accutest

Sample Summary

Haley & Aldrich

Job No: TD12350

Plymouth Tube Groundwater Monitoring - 128159-002
Project No: 128159.002

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD12350-1	11/15/17	08:10		11/16/17	AQ	Ground Water	PT-3D-126-11152017
TD12350-2	11/15/17	09:00		11/16/17	AQ	Ground Water	PT-3-90-11152017
TD12350-3	11/15/17	10:20		11/16/17	AQ	Ground Water	PT-1S-90-11152017
TD12350-4	11/15/17	11:15		11/16/17	AQ	Ground Water	PT-2S-90-11152017
TD12350-5	11/15/17	12:00		11/16/17	AQ	Ground Water	ERB-11152017
TD12350-6	11/15/17	00:00		11/16/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD12350
Site:	Plymouth Tube Groundwater Monitoring - 128159-002	**Report Date**	11/28/2017 3:37:51 P

5 Sample(s) collected on 11/15/2017 and received intact at Accutest on 11/16/2017 and properly preserved in 1 cooler at 2.8 Deg C. The samples received an Accutest job number of TD12350. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1853

- All data for batch F:MS38899 was analyzed at SGS Accutest, Fl.

MS Volatiles By Method SW846 8260C

Matrix: AQ	Batch ID: VZ5488

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Chloroethane are outside control limits.
- VZ5488-BSD: Insufficient sample available for MS/MSD. AZ:N1,Q9
- TD12350-2 for Chloroethane: AZ:L1
- TD12350-4 for Tetrachloroethylene: AZ:E4
- VZ5488-BS for Chloroethane: Outside control limits biased high. Analyte not detected in associated samples.
- TD12350-4 for Dichlorodifluoromethane: AZ:V1
- TD12350-6 for Chloroethane: AZ:L1
- TD12350-6 for Methyl chloride: AZ:V1
- TD12350-6 for Trichlorofluoromethane: AZ:V1
- TD12350-1 for Chloroethane: AZ:L1
- TD12350-1 for Dichlorodifluoromethane: AZ:V1
- TD12350-1 for Methyl chloride: AZ:V1
- TD12350-2 for Dichlorodifluoromethane: AZ:V1
- TD12350-1 for Trichlorofluoromethane: AZ:V1
- TD12350-2 for Methyl chloride: AZ:V1
- TD12350-2 for Trichlorofluoromethane: AZ:V1
- TD12350-3 for Chloroethane: AZ:L1
- TD12350-3 for Dichlorodifluoromethane: AZ:V1
- TD12350-3 for Methyl chloride: AZ:V1
- TD12350-3 for Trichlorofluoromethane: AZ:V1
- TD12350-4 for Chloroform: AZ:E4
- TD12350-6 for Dichlorodifluoromethane: AZ:V1
- TD12350-4 for Chloroethane: AZ:L1
- TD12350-5 for Trichlorofluoromethane: AZ:V1
- TD12350-4 for Methyl chloride: AZ:V1
- TD12350-4 for Trichlorofluoromethane: AZ:V1
- TD12350-5 for Chloroethane: AZ:L1
- TD12350-5 for Dichlorodifluoromethane: AZ:V1
- TD12350-5 for Methyl chloride: AZ:V1

Matrix: AQ	Batch ID: VZ5490

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12350-4MS, TD12350-4MSD were used as the QC samples indicated.
- TD12350-4 for Trichloroethylene: AZ:D2

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job**	TD12350
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring -	**Report**	11/27/2017 12:49:36

4 Samples were collected on 11/15/2017 and were received at SGS Accutest Southeast (SASE) on 11/21/2017 properly preserved, at 4.9 Deg. C and intact. These Samples received an SASE job number of TD12350. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1853

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA49572-3MS, FA49572-3MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

Date: November 27, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD12350
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002
Collected: 11/15/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD12350-1	**PT-3D-126-11152017**					
Bromoform		1.4	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene		0.67	0.50	0.30	ug/l	SW846 8260C
TD12350-2	**PT-3-90-11152017**					
1,4-Dioxane [a]		10.6	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		22.1	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene		168	0.50	0.30	ug/l	SW846 8260C
TD12350-3	**PT-1S-90-11152017**					
1,4-Dioxane [a]		16.2	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		26.5	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene		87.7	0.50	0.30	ug/l	SW846 8260C
TD12350-4	**PT-2S-90-11152017**					
1,4-Dioxane [a]		42.3	1.0	0.30	ug/l	SW846 8260B BY SIM
Chloroform [b]		0.45 J	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethane		0.58	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene		90.8	0.50	0.30	ug/l	SW846 8260C
Tetrachloroethylene [b]		0.37 J	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene [c]		538	5.0	3.0	ug/l	SW846 8260C

TD12350-5 **ERB-11152017**

No hits reported in this sample.

TD12350-6 **TRIP BLANK**

No hits reported in this sample.

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) AZ:E4
(c) AZ:D2

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60429.D	1	11/21/17 22:58	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	1.4	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	0.67	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49360.D	1	11/22/17 16:11	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	106%		74-125%
2037-26-5	Toluene-D8	96%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60430.D	1	11/21/17 23:22	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	22.1	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	168	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49361.D	1	11/22/17 16:36	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	10.6	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	107%		74-125%
2037-26-5	Toluene-D8	106%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60431.D	1	11/21/17 23:46	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	26.5	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	87.7	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49362.D	1	11/22/17 17:01	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	16.2	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	107%		74-125%
2037-26-5	Toluene-D8	105%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60432.D	1	11/22/17 00:11	EM	n/a	n/a	VZ5488
Run #2	Z60476.D	10	11/22/17 21:28	EM	n/a	n/a	VZ5490

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform [b]	0.45	0.50	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	0.58	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	90.8	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [c]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [c]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene [b]	0.37	0.50	0.30	ug/l	J
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene [d]	538 [e]	5.0	3.0	ug/l	
75-69-4	Trichlorofluoromethane [c]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	105%	108%	68-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	100%	104%	80-119%
460-00-4	4-Bromofluorobenzene	101%	100%	72-126%

(a) AZ:L1
(b) AZ:E4
(c) AZ:V1
(d) AZ:D2
(e) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49363.D	1	11/22/17 17:25	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	42.3	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	106%		74-125%
2037-26-5	Toluene-D8	109%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-11152017		
Lab Sample ID:	TD12350-5	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60433.D	1	11/22/17 00:35	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-11152017		
Lab Sample ID:	TD12350-5	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-11152017		
Lab Sample ID:	TD12350-5	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD12350-6	**Date Sampled:**	11/15/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60428.D	1	11/21/17 22:34	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD12350-6	**Date Sampled:**	11/15/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD12350-6	**Date Sampled:**	11/15/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L1	The associated blank spike recovery was above laboratory acceptance limits.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

pg 1 of 1

SGS PHOENIX ACCUTEST CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking # 7707 6031 2333
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: C TD12350

Client / Reporting Information

Company Name: Haley + Aldrich
Address: 400 E. Van Buren St.
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / C Nemanic

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-002
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	8260SIM (1,4-Dioxane)	LAB USE ONLY
1	PT-3D-126-11152017	11-15-17	0810	LP/CN	GW	6	6								X	X	
2	PT-3-90-11152017		0900			6	6								X	X	
3	PT-1S-90-11152017		1020			6	6								X	X	
4	PT-2S-90-11152017		1115			6	6								X	X	
5	ERB-11152017		1200			3	3								X		
6	Trip Blank					2	2								X		

Matrix Codes
WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
OI-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

LAGGED BY:

Turnaround Time (Business days)

- [ ] 10 Day
- [x] 5 Day Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Approved By:/ Date:

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

VERIFIED BY:

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature] 11-15-17	11/15/17 13:40	1 [signature] Ashley Yoan	2 Ashley Yoan	11/15/17 1600	2 Fed Ex
Relinquished by: 3 FedEx 13:40	Date Time: 11/16/17 945	Received By: 3 [signature]	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Appropriate Bottle / Pres. Y / N Headspace Y / N On Ice Y / N Labels match Coc? Y / N Separate Receiving Check List used: Y / N	Cooler Temp. 2.8 °C oC

5.2
5

TD12350: Chain of Custody
Page 1 of 5

SGS ACCUTEST

COOLER TEMP FORM

TC# TD12350

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 11-16-17

Client: Haley & Aldrich

Cooler Number: 1

Thermometer ID: 029 CF, °C 0 Corrected Temp, °C 2.8

SAMPLES CONTAINED IN COOLER

Fed # 770760312333

ADING INSPECTION,
IPANY.

Form: SM027-06 Rev 10/24/2016

TD12350: Chain of Custody
Page 2 of 5

5.2 5

SGS Accutest Sample Receipt Summary

Job Number: TD12350 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: 11/16/2017 9:45:00 AM **Delivery Method:** **Airbill #'s:** 770760312333

No. Coolers: 1 **Therm ID:** IR9; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2.8/2.8);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑		☐	☐	☑	☐
2. Trip Blank listed on COC:	☑		☐	☐		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☑		☐	☐		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Sample Receipt Log

Job #: TD12350 **Date / Time Received:** 11/16/2017 9:45:00 AM 9:45: **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD12350-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8

Sample Receipt Log

Job #: TD12350 **Date / Time Received:** 11/16/2017 9:45:00 AM 9:45: **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD12350-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-MB	Z60427.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-MB	Z60427.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-MB	Z60427.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	103%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	100%	72-126%

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5490-MB	Z60475.D	1	11/22/17	EM	n/a	n/a	VZ5490

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-4

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	68-124%
2037-26-5	Toluene-D8	103%	80-119%
460-00-4	4-Bromofluorobenzene	102%	72-126%

Blank Spike Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5490-BS	Z60473.D	1	11/22/17	EM	n/a	n/a	VZ5490

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
79-01-6	Trichloroethylene	25	25.1	100	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-BS	Z60422.D	1	11/21/17	EM	n/a	n/a	VZ5488
VZ5488-BSD [a]	Z60423.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	125	124	99	124	99	0	46-129/30
71-43-2	Benzene	25	24.4	98	25.5	102	4	68-119/30
108-86-1	Bromobenzene	25	24.1	96	25.7	103	6	71-119/30
74-97-5	Bromochloromethane	25	25.6	102	26.7	107	4	71-118/30
75-27-4	Bromodichloromethane	25	25.5	102	27.0	108	6	72-118/30
75-25-2	Bromoform	25	21.8	87	23.0	92	5	54-123/30
104-51-8	n-Butylbenzene	25	26.6	106	27.7	111	4	66-123/30
135-98-8	sec-Butylbenzene	25	26.5	106	28.0	112	6	72-123/30
98-06-6	tert-Butylbenzene	25	25.8	103	26.9	108	4	70-124/30
108-90-7	Chlorobenzene	25	24.2	97	25.2	101	4	74-120/30
75-00-3	Chloroethane	25	36.0	144* [b]	37.2	149* [b]	3	61-132/30
67-66-3	Chloroform	25	25.0	100	26.0	104	4	73-122/30
95-49-8	o-Chlorotoluene	25	25.0	100	26.2	105	5	71-122/30
106-43-4	p-Chlorotoluene	25	25.5	102	26.7	107	5	73-120/30
56-23-5	Carbon tetrachloride	25	26.8	107	27.9	112	4	73-133/30
75-34-3	1,1-Dichloroethane	25	28.4	114	29.6	118	4	72-121/30
75-35-4	1,1-Dichloroethylene	25	28.8	115	29.4	118	2	67-140/30
563-58-6	1,1-Dichloropropene	25	25.9	104	27.3	109	5	73-130/30
96-12-8	1,2-Dibromo-3-chloropropane	25	24.4	98	25.1	100	3	57-133/30
106-93-4	1,2-Dibromoethane	25	25.0	100	26.3	105	5	69-121/30
107-06-2	1,2-Dichloroethane	25	24.9	100	25.7	103	3	68-121/30
78-87-5	1,2-Dichloropropane	25	25.0	100	26.1	104	4	72-116/30
142-28-9	1,3-Dichloropropane	25	23.6	94	24.7	99	5	70-118/30
108-20-3	Di-Isopropyl ether	25	26.4	106	27.5	110	4	67-117/30
594-20-7	2,2-Dichloropropane	25	25.7	103	26.1	104	2	57-141/30
124-48-1	Dibromochloromethane	25	27.4	110	28.8	115	5	68-119/30
75-71-8	Dichlorodifluoromethane	25	31.9	128	33.2	133	4	29-182/30
156-59-2	cis-1,2-Dichloroethylene	25	27.1	108	28.2	113	4	72-117/30
10061-01-5	cis-1,3-Dichloropropene	25	24.4	98	25.5	102	4	71-118/30
541-73-1	m-Dichlorobenzene	25	24.3	97	26.1	104	7	73-117/30
95-50-1	o-Dichlorobenzene	25	23.9	96	25.0	100	4	71-117/30
106-46-7	p-Dichlorobenzene	25	23.7	95	24.8	99	5	71-116/30
156-60-5	trans-1,2-Dichloroethylene	25	28.7	115	29.6	118	3	68-124/30
10061-02-6	trans-1,3-Dichloropropene	25	23.7	95	24.4	98	3	72-127/30
100-41-4	Ethylbenzene	25	25.3	101	26.1	104	3	71-117/30
637-92-3	Ethyl tert-Butyl Ether	25	24.1	96	25.2	101	4	66-122/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-BS	Z60422.D	1	11/21/17	EM	n/a	n/a	VZ5488
VZ5488-BSD [a]	Z60423.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	125	129	103	131	105	2	49-124/30
87-68-3	Hexachlorobutadiene	25	26.4	106	27.6	110	4	62-143/30
98-82-8	Isopropylbenzene	25	27.0	108	28.5	114	5	74-141/30
99-87-6	p-Isopropyltoluene	25	26.2	105	27.4	110	4	72-126/30
108-10-1	4-Methyl-2-pentanone	125	125	100	128	102	2	54-122/30
74-83-9	Methyl bromide	25	30.3	121	31.4	126	4	53-138/30
74-87-3	Methyl chloride	25	32.1	128	32.7	131	2	50-145/30
74-95-3	Methylene bromide	25	24.9	100	25.6	102	3	71-117/30
75-09-2	Methylene chloride	25	28.0	112	27.1	108	3	60-125/30
78-93-3	Methyl ethyl ketone	125	135	108	136	109	1	51-129/30
1634-04-4	Methyl Tert Butyl Ether	25	24.8	99	25.5	102	3	65-119/30
91-20-3	Naphthalene	25	26.3	105	27.1	108	3	53-139/30
103-65-1	n-Propylbenzene	25	25.7	103	26.8	107	4	72-123/30
100-42-5	Styrene	25	25.8	103	26.8	107	4	74-119/30
994-05-8	Tert-Amyl Methyl Ether	25	22.6	90	23.7	95	5	63-119/30
75-65-0	Tert Butyl Alcohol	250	230	92	235	94	2	45-146/30
630-20-6	1,1,1,2-Tetrachloroethane	25	26.5	106	27.8	111	5	74-119/30
71-55-6	1,1,1-Trichloroethane	25	27.3	109	28.8	115	5	72-129/30
79-34-5	1,1,2,2-Tetrachloroethane	25	25.2	101	26.2	105	4	62-121/30
79-00-5	1,1,2-Trichloroethane	25	24.9	100	25.4	102	2	70-119/30
87-61-6	1,2,3-Trichlorobenzene	25	24.7	99	25.6	102	4	44-144/30
96-18-4	1,2,3-Trichloropropane	25	24.7	99	25.2	101	2	61-124/30
120-82-1	1,2,4-Trichlorobenzene	25	24.8	99	25.4	102	2	57-132/30
95-63-6	1,2,4-Trimethylbenzene	25	24.8	99	26.2	105	5	70-121/30
108-67-8	1,3,5-Trimethylbenzene	25	26.4	106	27.7	111	5	66-119/30
127-18-4	Tetrachloroethylene	25	27.0	108	28.0	112	4	72-132/30
108-88-3	Toluene	25	24.3	97	25.2	101	4	73-119/30
79-01-6	Trichloroethylene	25	26.1	104	27.1	108	4	73-121/30
75-69-4	Trichlorofluoromethane	25	34.9	140	36.6	146	5	46-152/30
75-01-4	Vinyl chloride	25	26.1	104	27.4	110	5	54-126/30
1330-20-7	Xylene (total)	75	75.1	100	79.2	106	5	74-119/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	106%	105%	72-122%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-BS	Z60422.D	1	11/21/17	EM	n/a	n/a	VZ5488
VZ5488-BSD [a]	Z60423.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
17060-07-0	1,2-Dichloroethane-D4	103%	103%	68-124%
2037-26-5	Toluene-D8	101%	100%	80-119%
460-00-4	4-Bromofluorobenzene	102%	103%	72-126%

(a) Insufficient sample available for MS/MSD. AZ:N1,Q9
(b) Outside control limits biased high. Analyte not detected in associated samples.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD12350-4MS	Z60477.D	10	11/22/17	EM	n/a	n/a	VZ5490
TD12350-4MSD	Z60478.D	10	11/22/17	EM	n/a	n/a	VZ5490
TD12350-4	Z60476.D	10	11/22/17	EM	n/a	n/a	VZ5490

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-4

CAS No.	Compound	TD12350-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	538		250	762	90	250	774	94	2	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD12350-4	Limits
1868-53-7	Dibromofluoromethane	108%	108%	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	109%	108%	68-124%
2037-26-5	Toluene-D8	102%	102%	104%	80-119%
460-00-4	4-Bromofluorobenzene	106%	104%	100%	72-126%

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Southeast)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD12350

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX.	LAB USE ONLY
1	PT-3D-126-11152017		11/15/17	8:10:00 AM		AQ										X	
2	PT-3-90-11152017		11/15/17	9:00:00 AM		AQ										X	
3	PT-15-90-11152017		11/15/17	10:20:00 AM		AQ										X	
4	PT-25-90-11152017		11/15/17	11:15:00 AM		AQ										X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other 27-Nov

Emergency & Rush TIA data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	11/20/17 1800	1	2		2 11/21/17 930
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp. 4.9

7.1

7

TD12350: Chain of Custody
Page 1 of 2
SGS Accutest Southeast

SGS Accutest Sample Receipt Summary

Job Number: TD12350 **Client:** ALGC **Project:** PLYMOUTH TUBE

Date / Time Received: 11/21/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 1001891723010003281100564246214909

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.5);

Cooler Temps (Corrected) °C: Cooler 1: (4.9);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☐		☑	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments SAMPLE #3 ID SHOULD BE PT-1S NOT 15. SAMPLE #4 ID SHOULD BE PT-2S NOT 25.

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 11/21/2017 9:30:00 A Reviewer: P.H Date: 11/21/2017

7.1

7

TD12350: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

(SGS Accutest Southeast)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD12350
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1853-MB	Z49345.D	1	11/22/17	MM	n/a	n/a	VZ1853

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD12350-1, TD12350-2, TD12350-3, TD12350-4

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	105%	74-125%
2037-26-5	Toluene-D8	103%	88-111%

Blank Spike Summary

Job Number: TD12350
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1853-BS	Z49343.D	1	11/22/17	MM	n/a	n/a	VZ1853

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD12350-1, TD12350-2, TD12350-3, TD12350-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.1	91	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	104%	74-125%
2037-26-5	Toluene-D8	104%	88-111%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD12350
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA49572-3MS	Z49364.D	1	11/22/17	MM	n/a	n/a	VZ1853
FA49572-3MSD	Z49365.D	1	11/22/17	MM	n/a	n/a	VZ1853
FA49572-3	Z49348.D	1	11/22/17	MM	n/a	n/a	VZ1853

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD12350-1, TD12350-2, TD12350-3, TD12350-4

CAS No.	Compound	FA49572-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	6.7		20	26.5	99	20	26.1	97	2	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA49572-3	Limits
17060-07-0	1,2-Dichloroethane-D4	110%	112%	110%	74-125%
2037-26-5	Toluene-D8	103%	104%	103%	88-111%

8.3.1

8

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-003

128159-003

SGS Job Number: TD14014

Sampling Date: 12/19/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: **112**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary 3
Section 2: Case Narrative/Conformance Summary 4
Section 3: Summary of Hits 8
Section 4: Sample Results 10
4.1: TD14014-1: PT-3-90-121917 11
4.2: TD14014-2: PT-2S-90-121917 18
4.3: TD14014-3: LB-7R-90-121917 25
4.4: TD14014-4: ISCO-1-S-85-121917 32
4.5: TD14014-5: ISCO-1-D-98-121917 39
4.6: TD14014-6: LB-7R-90-121917-DUP 46
4.7: TD14014-7: ERB-121917 49
4.8: TD14014-8: TRIP BLANK 52
Section 5: Subcontract Lab Data 55
Section 6: Misc. Forms 69
6.1: Arizona Qualifiers 70
6.2: Chain of Custody 71
Section 7: MS Volatiles - QC Data Summaries 77
7.1: Method Blank Summary 78
7.2: Blank Spike Summary 81
7.3: Matrix Spike/Matrix Spike Duplicate Summary 84
Section 8: GC Volatiles - QC Data Summaries 87
8.1: Method Blank Summary 88
8.2: Blank Spike/Blank Spike Duplicate Summary 89
Section 9: General Chemistry - QC Data Summaries 90
9.1: Method Blank and Spike Results Summary 91
9.2: Duplicate Results Summary 92
9.3: Matrix Spike Results Summary 93
Section 10: Misc. Forms (SGS Orlando, FL) 94
10.1: Chain of Custody 95
Section 11: MS Volatiles - QC Data (SGS Orlando, FL) 97
11.1: Method Blank Summary 98
11.2: Blank Spike Summary 100
11.3: Matrix Spike/Matrix Spike Duplicate Summary 102
Section 12: Misc. Forms (SGS Scott, LA) 104
12.1: Chain of Custody 105
Section 13: Metals Analysis - QC Data (SGS Scott, LA) 107
13.1: Prep QC MP10205: Fe,Na 108

SGS North America Inc.

Sample Summary

Haley & Aldrich

Job No: TD14014

Plymouth Tube Groundwater Monitoring - 128159-003
Project No: 128159-003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD14014-1	12/19/17	09:10		12/20/17	AQ	Ground Water	PT-3-90-121917
TD14014-1X	12/19/17	09:10		12/20/17	AQ	Ground Water	PT-3-90-121917
TD14014-2	12/19/17	10:35		12/20/17	AQ	Ground Water	PT-2S-90-121917
TD14014-2X	12/19/17	10:35		12/20/17	AQ	Ground Water	PT-2S-90-121917
TD14014-3	12/19/17	11:45		12/20/17	AQ	Ground Water	LB-7R-90-121917
TD14014-3X	12/19/17	11:45		12/20/17	AQ	Ground Water	LB-7R-90-121917
TD14014-4	12/19/17	13:20		12/20/17	AQ	Ground Water	ISCO-1-S-85-121917
TD14014-4X	12/19/17	13:20		12/20/17	AQ	Ground Water	ISCO-1-S-85-121917
TD14014-5	12/19/17	14:30		12/20/17	AQ	Ground Water	ISCO-1-D-98-121917
TD14014-5X	12/19/17	14:30		12/20/17	AQ	Ground Water	ISCO-1-D-98-121917
TD14014-6	12/19/17	11:50		12/20/17	AQ	Ground Water	LB-7R-90-121917-DUP
TD14014-7	12/19/17	12:20		12/20/17	AQ	Ground Water	ERB-121917
TD14014-8	12/19/17	00:00		12/20/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD14014
Site:	Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	1/2/2018 4:03:05 PM

7 Samples were collected on 12/19/2017 and received intact at Accutest on 12/20/2017 and properly preserved in 1 cooler at 1 Deg C. The samples received an Accutest job number of TD14014. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1874

- Analysis performed at SGS Accutest, Orlando, FL.

Matrix: AQ **Batch ID:** F:VZ1875

- Analysis performed at SGS Accutest, Orlando, FL.

MS Volatiles By Method SW846 8260C

Matrix: AQ **Batch ID:** VE2876

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD14135-2MS, TD14135-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Chloroethane are outside control limits.
- Matrix Spike Recovery(s) for Chloroethane are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Chloroethane are outside control limits. Probable cause due to matrix interference.
- TD14014-4: AZ:D2
- TD14014-4 for Chloroethane: AZ:V1,L1
- TD14014-4 for 1,1-Dichloroethane: AZ:E4
- TD14014-4 for Bromoform: AZ:E4
- TD14014-3 for Acetone: AZ:E4
- TD14014-7 for Chloroethane: AZ:V1,L1
- TD14014-6 for Chloroethane: AZ:V1,L1
- TD14014-6 for Trichloroethylene: AZ:E4
- TD14014-6 for Acetone: AZ:E4
- TD14014-5 for Chloroethane: AZ:V1,L1
- TD14014-5 for Bromoform: AZ:E4
- TD14014-3 for Chloroethane: AZ:V1,L1
- TD14014-3 for Bromoform: AZ:E4
- TD14014-1 for Chloroethane: AZ:V1,L1
- TD14014-2 for Chloroethane: AZ:V1,L1
- TD14014-8 for Chloroethane: AZ:V1,L1
- TD14014-3 for Trichloroethylene: AZ:E4

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ	**Batch ID:** GSS829

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- GSS829-BSD: Insufficient sample for MS/MSD. AZ:Q9

Metals Analysis By Method SW846 6010C

Matrix: AQ	**Batch ID:** L:MP10205

- All data for batch L:MP10205 was analyzed at SGS Accutest, La.
- TD14014-5 for Sodium: AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
- TD14014-4 for Sodium: AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
- TD14014-3 for Sodium: AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

General Chemistry By Method EPA 300.0

Matrix: AQ	**Batch ID:** GP45570

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD14014-1DUP, TD14014-1MS were used as the QC samples for Nitrogen, Nitrate, Nitrogen, Nitrite, Nitrogen, Nitrate.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate are outside control limits. Outside control limits due to matrix interference.

Matrix: AQ	**Batch ID:** GP45597

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD14014-1DUP, TD14014-1MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ	**Batch ID:** GN86736

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD14014-1DUP, TD14014-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5 Sample received and analyzed out of holding time.

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS Houston, TX **Job No** TD14014

Site: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003 **Report Date** 12/28/2017 4:03:48 P

5 samples, 0 trip blanks and 0 field blanks were collected on 12/19/2017 and were received intact at Accutest on 12/20/2017, properly preserved and cool at 2.6 Deg C. These Samples received an Accutest job number of TD14014. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP10205

- Sample(s) LA39947-2MS, LA39947-2MSD, LA39947-2SDL were used as the QC samples for metals.
- Matrix Spike Duplicate Recovery(s) for Iron are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Serial Dilution for Sodium are outside control limits for sample MP10205-SDL. Serial Dilution indicates possible matrix interference.
- TD14014-5 for Sodium: AZ:D2
- TD14014-4 for Sodium: AZ:D2
- TD14014-3 for Sodium: AZ:D2
- MP10205-SDL for Sodium: Spike recovery indicates possible matrix interference or sample non-homogeneity.

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Houston, TX	**Job**	TD14014
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring -	**Report**	1/2/2018 10:23:39

5 Samples were collected on 12/19/2017 and were received at SGS Accutest Southeast (SASE) on 12/22/2017 properly preserved, at 3.4 Deg. C and intact. These Samples received an SASE job number of TD14014. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1874

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA50459-1MS, FA50459-1MSD were used as the QC samples indicated.

Sample(s) TD14014-4, TD14014-5 have surrogates outside control limits.

TD14014-4 for Toluene-D8: Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

TD14014-5 for Toluene-D8: Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

TD14014-4: Sample contains residual chlorine. AZ:N1

TD14014-5: Sample contains residual chlorine. AZ:N1

Matrix: AQ **Batch ID:** VZ1875

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA50371-2MS, FA50371-2MSD were used as the QC samples indicated.

Sample(s) TD14014-4, TD14014-5 have surrogates outside control limits.

TD14014-4: Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1

TD14014-5: Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1

TD14014-3: Sample contains residual chlorine. AZ:N1

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: January 2, 2018

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD14014
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 12/19/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD14014-1	**PT-3-90-121917**					
1,4-Dioxane [a]		10.1	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		16.4	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		165	1.0	0.30	ug/l	SW846 8260C
Sodium [b]		448000	500		ug/l	SW846 6010C
Chloride		631	25		mg/l	EPA 300.0
Nitrogen, Nitrate		15.6	0.50		mg/l	EPA 300.0
Sulfate		355	30		mg/l	EPA 300.0
TD14014-2	**PT-2S-90-121917**					
1,4-Dioxane [a]		37.5	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		96.4	4.0	1.2	ug/l	SW846 8260C
Trichloroethylene		608	4.0	1.2	ug/l	SW846 8260C
Sodium [b]		461000	500		ug/l	SW846 6010C
Chloride		693	25		mg/l	EPA 300.0
Sulfate		379	30		mg/l	EPA 300.0
TD14014-3	**LB-7R-90-121917**					
1,4-Dioxane [c]		1.1	1.0	0.30	ug/l	SW846 8260B BY SIM
Acetone [d]		23.5 J	50	10	ug/l	SW846 8260C
Bromoform [d]		0.72 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [d]		0.45 J	1.0	0.30	ug/l	SW846 8260C
Sodium [e]		2340000	2500		ug/l	SW846 6010C
Chloride		843	50		mg/l	EPA 300.0
Sulfate		1690	60		mg/l	EPA 300.0
TD14014-4	**ISCO-1-S-85-121917**					
1,4-Dioxane [c]		20.9	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform [f]		0.52 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [f]		0.46 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [g]		36.3	1.0	0.30	ug/l	SW846 8260C
Iron [b]		610	100		ug/l	SW846 6010C
Sodium [e]		1500000	2500		ug/l	SW846 6010C
Chloride		628	50		mg/l	EPA 300.0
Sulfate		1030	60		mg/l	EPA 300.0
TD14014-5	**ISCO-1-D-98-121917**					
1,4-Dioxane [c]		8.5	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform [d]		0.77 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		11.0	1.0	0.30	ug/l	SW846 8260C

Summary of Hits

Job Number: TD14014
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 12/19/17

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Iron [b]		893	100		ug/l	SW846 6010C
Sodium [e]		2260000	2500		ug/l	SW846 6010C
Chloride		617	50		mg/l	EPA 300.0
Sulfate		2050	60		mg/l	EPA 300.0
TD14014-6	**LB-7R-90-121917-DUP**					
Acetone [d]		25.8 J	50	10	ug/l	SW846 8260C
Bromoform		1.2	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [d]		0.35 J	1.0	0.30	ug/l	SW846 8260C
TD14014-7	**ERB-121917**					
No hits reported in this sample.						
TD14014-8	**TRIP BLANK**					
Toluene		1.0	1.0	0.30	ug/l	SW846 8260C

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(c) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(d) AZ:E4
(e) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(f) AZ:D2 AZ:E4
(g) AZ:D2

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064813.D	1	12/27/17 15:06	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	16.4	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	165	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	79%		68-124%
2037-26-5	Toluene-D8	100%		80-119%

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RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49933.D	1	12/26/17 13:21	AFL	n/a	n/a	F:VZ1874
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	10.1	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		74-125%
2037-26-5	Toluene-D8	104%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018860.D	1	12/29/17 12:45	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	448000	500	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA10276
(2) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	631	25	mg/l	50	12/21/17 10:06	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Nitrogen, Nitrate	15.6	0.50	mg/l	1	12/20/17 19:41	ES	EPA 300.0
Nitrogen, Nitrite	< 0.50	0.50	mg/l	1	12/20/17 19:41	ES	EPA 300.0
Sulfate	355	30	mg/l	50	12/21/17 10:06	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064814.D	4	12/27/17 15:30	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	200	40	ug/l	
71-43-2	Benzene	ND	4.0	1.2	ug/l	
108-86-1	Bromobenzene	ND	4.0	1.2	ug/l	
74-97-5	Bromochloromethane	ND	4.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	4.0	1.2	ug/l	
75-25-2	Bromoform	ND	4.0	1.2	ug/l	
104-51-8	n-Butylbenzene	ND	4.0	1.2	ug/l	
135-98-8	sec-Butylbenzene	ND	4.0	1.2	ug/l	
98-06-6	tert-Butylbenzene	ND	4.0	1.2	ug/l	
108-90-7	Chlorobenzene	ND	4.0	1.2	ug/l	
75-00-3	Chloroethane [a]	ND	4.0	1.3	ug/l	
67-66-3	Chloroform	ND	4.0	1.2	ug/l	
95-49-8	o-Chlorotoluene	ND	4.0	1.2	ug/l	
106-43-4	p-Chlorotoluene	ND	4.0	1.2	ug/l	
75-15-0	Carbon disulfide	ND	20	3.0	ug/l	
56-23-5	Carbon tetrachloride	ND	4.0	2.2	ug/l	
75-34-3	1,1-Dichloroethane	ND	4.0	1.2	ug/l	
75-35-4	1,1-Dichloroethylene	96.4	4.0	1.2	ug/l	
563-58-6	1,1-Dichloropropene	ND	4.0	1.2	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	8.0	1.3	ug/l	
106-93-4	1,2-Dibromoethane	ND	4.0	1.2	ug/l	
107-06-2	1,2-Dichloroethane	ND	4.0	1.2	ug/l	
78-87-5	1,2-Dichloropropane	ND	4.0	1.2	ug/l	
142-28-9	1,3-Dichloropropane	ND	4.0	1.2	ug/l	
594-20-7	2,2-Dichloropropane	ND	4.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	4.0	1.2	ug/l	
75-71-8	Dichlorodifluoromethane	ND	8.0	2.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	4.0	1.2	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	4.0	1.2	ug/l	
541-73-1	m-Dichlorobenzene	ND	4.0	1.2	ug/l	
95-50-1	o-Dichlorobenzene	ND	4.0	1.2	ug/l	
106-46-7	p-Dichlorobenzene	ND	4.0	1.2	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	4.0	1.2	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	4.0	1.2	ug/l	
100-41-4	Ethylbenzene	ND	4.0	1.2	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	4.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	40	4.6	ug/l	
87-68-3	Hexachlorobutadiene	ND	4.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	4.0	1.2	ug/l	
99-87-6	p-Isopropyltoluene	ND	4.0	1.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	40	9.4	ug/l	
74-83-9	Methyl bromide	ND	4.0	2.0	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.2	ug/l	
74-95-3	Methylene bromide	ND	4.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	20	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	40	10	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	4.0	1.2	ug/l	
91-20-3	Naphthalene	ND	20	2.0	ug/l	
103-65-1	n-Propylbenzene	ND	4.0	1.2	ug/l	
100-42-5	Styrene	ND	4.0	1.2	ug/l	
75-65-0	Tert Butyl Alcohol	ND	80	12	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	4.0	1.2	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	4.0	1.2	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	4.0	1.2	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	4.0	1.2	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	4.0	1.5	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	4.0	1.2	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	4.0	1.2	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	4.0	1.2	ug/l	
127-18-4	Tetrachloroethylene	ND	4.0	1.2	ug/l	
108-88-3	Toluene	ND	4.0	1.2	ug/l	
79-01-6	Trichloroethylene	608	4.0	1.2	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	1.2	ug/l	
75-01-4	Vinyl chloride	ND	4.0	1.2	ug/l	
1330-20-7	Xylene (total)	ND	12	2.6	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	81%		68-124%
2037-26-5	Toluene-D8	100%		80-119%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49934.D	1	12/26/17 13:45	AFL	n/a	n/a	F:VZ1874
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	37.5	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		74-125%
2037-26-5	Toluene-D8	104%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018861.D	1	12/29/17 12:59	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	461000	500	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA10276
(2) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	693	25	mg/l	50	12/21/17 10:53	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	379	30	mg/l	50	12/21/17 10:53	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064815.D	1	12/27/17 15:54	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	23.5	50	10	ug/l	J
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	0.72	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene [a]	0.45	1.0	0.30	ug/l	J
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	83%		68-124%
2037-26-5	Toluene-D8	102%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:E4
(b) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49965.D	1	12/27/17 14:00	AFL	n/a	n/a	F:VZ1875
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	1.1	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	88%		74-125%
2037-26-5	Toluene-D8	90%		88-111%

(a) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018862.D	1	12/29/17 13:14	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [3]
Sodium [b]	2340000	2500	ug/l	5	12/22/17	12/26/17	ALA	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: L:MA10276
(2) Instrument QC Batch: L:MA10285
(3) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	843	50	mg/l	100	12/21/17 11:08	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	1690	60	mg/l	100	12/21/17 11:08	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E0064816.D	1	12/27/17 16:18	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [b]	0.52	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [c]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [b]	0.46	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	36.3	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	82%		68-124%
2037-26-5	Toluene-D8	94%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) AZ:D2
(b) AZ:E4
(c) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49936.D	1	12/26/17 14:35	AFL	n/a	n/a	F:VZ1874
Run #2 [b]	Z49961.D	1	12/27/17 12:22	AFL	n/a	n/a	F:VZ1875

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	20.9	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%	91%	74-125%
2037-26-5	Toluene-D8	84% [c]	82%	88-111%

(a) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(b) Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(c) Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018863.D	1	12/29/17 13:36	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	610	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [3]
Sodium [b]	1500000	2500	ug/l	5	12/22/17	12/26/17	ALA	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: L:MA10276
(2) Instrument QC Batch: L:MA10285
(3) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	628	50	mg/l	100	12/21/17 11:24	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	1030	60	mg/l	100	12/21/17 11:24	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064817.D	1	12/27/17 16:43	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	0.77	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	11.0	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	81%		68-124%
2037-26-5	Toluene-D8	92%		80-119%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) AZ:E4
(b) AZ:V1,L1

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49937.D	1	12/26/17 15:00	AFL	n/a	n/a	F:VZ1874
Run #2 [b]	Z49962.D	1	12/27/17 12:46	AFL	n/a	n/a	F:VZ1875

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	8.5	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	92%	74-125%
2037-26-5	Toluene-D8	71% [c]	65%	88-111%

(a) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(b) Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(c) Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018864.D	1	12/29/17 13:58	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	893	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [3]
Sodium [b]	2260000	2500	ug/l	5	12/22/17	12/26/17	ALA	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: L:MA10276
(2) Instrument QC Batch: L:MA10285
(3) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	617	50	mg/l	100	12/21/17 11:39	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	2050	60	mg/l	100	12/21/17 11:39	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LB-7R-90-121917-DUP		
Lab Sample ID:	TD14014-6	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064818.D	1	12/27/17 17:07	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	25.8	50	10	ug/l	J
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	1.2	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917-DUP		
Lab Sample ID:	TD14014-6	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene [a]	0.35	1.0	0.30	ug/l	J
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	83%		68-124%
2037-26-5	Toluene-D8	91%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917-DUP		
Lab Sample ID:	TD14014-6	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		72-126%

(a) AZ:E4
(b) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-121917		
Lab Sample ID:	TD14014-7	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064819.D	1	12/27/17 17:31	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-121917		
Lab Sample ID:	TD14014-7	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	82%		68-124%
2037-26-5	Toluene-D8	101%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-121917		
Lab Sample ID:	TD14014-7	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD14014-8	**Date Sampled:**	12/19/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064820.D	1	12/27/17 17:55	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD14014-8	**Date Sampled:**	12/19/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	1.0	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	81%		68-124%
2037-26-5	Toluene-D8	102%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD14014-8	**Date Sampled:**	12/19/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Subcontract Lab Data

Report of Analysis

Analytical Report 572057

for
SGS Accutest

Project Manager: Anita Patel

Plymouth Tube Groundwater Monitoring 128159-003

TD14014

28-DEC-17

Collected By: Client

4147 Greenbriar Dr.
Stafford, TX 77477

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

28-DEC-17

Project Manager: **Anita Patel**
SGS Accutest
10165 Harwin, Suite 150
Houston, TX 77036

Reference: XENCO Report No(s): **572057**
Plymouth Tube Groundwater Monitoring 128159-003
Project Address:

Anita Patel :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 572057. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 572057 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Debbie Simmons
Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Arizona Flags

All method blanks, laboratory spikes, and/or matrix spikes met quality control objectives for the parameters associated with this Work Order except as detailed below or on the Data Qualifier page of this report. Data Qualifiers used in this report are in accordance with ADHS Data Qualifiers, Revision 4.0 9/05/2012.
Data qualifiers (flags) contained within this analytical report have been issued to explain a quality control deficiency, and do not affect the quality (validity) of the data unless noted otherwise in the case narrative.

Sample Cross Reference 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PT-3-90-121917	W	12-19-17 09:10		572057-001
PT-2S-90-121917	W	12-19-17 10:35		572057-002
PTLB-7R-90-121917	W	12-19-17 11:45		572057-003
ISCO-1-S-85-121917	W	12-19-17 13:20		572057-004
ISCO-1-D-98-121917	W	12-19-17 14:30		572057-005

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **PT-3-90-121917**
Lab Sample Id: 572057-001

Matrix: Water
Date Collected: 12.19.17 09.10

Date Received: 12.22.17 11.30

Analytical Method: Alkalinity by SM2320B
Tech: DHE
Analyst: DHE
Seq Number: 3036939

Date Prep: 12.27.17 12.00

Prep Method: SM2320P
% Moisture:

5

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3	471-34-1	**347**	4.00	mg/L	12.27.17 11.52		1
Alkalinity, Carbonate (as CaCO3	3812-32-6	<4.00	4.00	mg/L	12.27.17 11.52	U	1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **PT-2S-90-121917**
Lab Sample Id: 572057-002

Matrix: Water
Date Collected: 12.19.17 10.35

Date Received:12.22.17 11.30

Analytical Method: Alkalinity by SM2320B
Tech: DHE
Analyst: DHE
Seq Number: 3036939

Date Prep: 12.27.17 12.00

Prep Method: SM2320P
% Moisture:

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3	471-34-1	**345**	4.00	mg/L	12.27.17 11.59		1
Alkalinity, Carbonate (as CaCO3	3812-32-6	<4.00	4.00	mg/L	12.27.17 11.59	U	1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **PTLB-7R-90-121917** Matrix: Water Date Received:12.22.17 11.30
Lab Sample Id: 572057-003 Date Collected: 12.19.17 11.45

Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
Tech: DHE % Moisture:
Analyst: DHE Date Prep: 12.27.17 12.00
Seq Number: 3036939

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	<4.00	4.00	mg/L	12.27.17 12.08	U	1
Alkalinity, Carbonate (as CaC	3812-32-6	**151**	4.00	mg/L	12.27.17 12.08		1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **ISCO-1-S-85-121917**
Lab Sample Id: 572057-004

Matrix: Water
Date Collected: 12.19.17 13.20

Date Received:12.22.17 11.30

Analytical Method: Alkalinity by SM2320B
Tech: DHE
Analyst: DHE
Seq Number: 3036939

Date Prep: 12.27.17 12.00

Prep Method: SM2320P
% Moisture:

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	<4.00	4.00	mg/L	12.27.17 12.18	U	1
Alkalinity, Carbonate (as CaC	3812-32-6	**313**	4.00	mg/L	12.27.17 12.18		1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **ISCO-1-D-98-121917** Matrix: Water Date Received:12.22.17 11.30
Lab Sample Id: 572057-005 Date Collected: 12.19.17 14.30

Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
Tech: DHE % Moisture:
Analyst: DHE Date Prep: 12.27.17 12.00
Seq Number: 3036939

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	<4.00	4.00	mg/L	12.27.17 12.44	U	1
Alkalinity, Carbonate (as CaC	3812-32-6	**341**	4.00	mg/L	12.27.17 12.44		1

QC Summary 572057

SGS Accutest

Plymouth Tube Groundwater Monitoring 128159-003

Analytical Method: **Alkalinity by SM2320B** Prep Method: SM2320P

Seq Number: 3036939 Matrix: Drinking Water Date Prep: 12.27.17

Parent Sample Id: 571948-001 MD Sample Id: 571948-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Alkalinity, Bicarbonate (as CaCO3)	200	200	0	20	mg/L	12.27.17 11:36	
Alkalinity, Carbonate (as CaCO3)	<4.00	<4.00	0	20	mg/L	12.27.17 11:36	U

5

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #

Bottle Order Control # 572057

SGS Accutest Quote #

SGS Accutest Job TD14014

Client / Reporting Information

Company Name: SGS Accutest

Street Address: 10165 Harwin Drive

City: Houston State: TX Zip: 77036

Project Contact: anita.patel@sgs.com E-mail:

Phone #: 713-271-4700 Fax #:

Sampler(s) Name(s) Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003

Street

City State

Project #

Client Purchase Order #

Project Manager

Billing Information (if different from Report to)

Company Name

Street Address

City State Zip

Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Alkalinity, Bicarbonate, Carbonate	LAB USE ONLY
1X	PT-3-90-121917		12/19/17	9:10:00 AM		AQ	1					1				X	
2X	PT-2S-90-121917		12/19/17	10:35:00 AM		AQ	1					1				X	
3X	PTLB-7R-90-121917		12/19/17	11:45:00 AM		AQ	1					1				X	
4X	ISCO-1-S-85-121917		12/19/17	1:20:00 PM		AQ	1					1				X	
5X	ISCO-1-D-98-121917		12/19/17	2:30:00 PM		AQ	1					1				X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY
- ☒ other Standard TAT

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format
- ☒ Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Please include PO#: TD14014 on invoice and report.

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Eddie Pach	12-22-17 1130	1 Jeff Wolz	2		2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☒ Cooler Temp.

IR ID:HOU-068 C/F: 0.4
Temp: 0.2 Corrected: 0.6

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: SGS Accutest

Date/ Time Received: 12/22/2017 11:30:00 AM

Work Order #: 572057

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR:HOU068

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.6
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**No**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: MPG

PH Device/Lot#: Lot#10BDH2271

Checklist completed by: Maria Paula Guerra — Date: 12/22/2017

Checklist reviewed by: Debbie Simmons — Date: 12/26/2017

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L1	The associated blank spike recovery was above laboratory acceptance limits.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

pg 1 of 1

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking # 7710 4547 0336
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: C TD14014

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E. Van Buren St.
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / S Kaney

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-003
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	8260SIM (1,4-Dioxane)	EPA 300 - Sulfate	SW846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron Field Filtered 45 Min	RSK 175 - methane, ethane, ethene	2320B - Alkalinity	EPA300 - Chloride	6010/6020 - Sodium			LAB USE ONLY
1	PT-3-90-121917	12-19-17	0910	CP/SK	G-W	11	8		1		2				X	X	X	X	X	X	X	X	X			
2	PT-2S-90-121917		1035			11	8		1		2				X	X	X	X	X	X	X	X	X			
3	PILB-7R-90-121917 *		1145			11	8		1		2				X	X	X	X	X	X	X	X	X			
4	ISCO-1-S-85-121917 *		1320			11	8		1		2				X	X	X	X	X	X	X	X	X			
5	ISCO-1-D-98-121917 *		1430			11	8		1		2				X	X	X	X	X	X	X	X	X			
6	LB-7R-90-121917-DUP		1150			3	3								X						X					
7	ERB-121917		1220			3	3								X											
8	Trip Blank					4	4								X											

* - Samples have high pH 11.8 - 12.2

Matrix Codes: WW- Wastewater; GW- Ground Water; SW- Surface Water; SO- Soil; OI-Oil; WP-Wipe; LIQ - Non-aqueous Liquid; AIR; DW- Drinking Water (Perchlorate Only)

Turnaround Time (Business days)

Approved By:/ Date:

- [x] 10 Day
- [ ] 5 Day
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

TD BY:

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Chad	12-19-17 16:12	1 Ashley Frum	2 Ashley Frum	12-19-17 16:35	2 Fed Ex
Relinquished by: 3 GeJ	Date Time: 12-20-17 1045	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Appropriate Bottle / Pres. Y / N; Labels match Coc? Y / N	Headspace Y / N; Separate Receiving Check List used: Y / N; On Ice Y / N; Cooler Temp. 1.0 oC

6.2 6

TD14014: Chain of Custody
Page 1 of 6

ACCUTEST

COOLER TEMP FORM

TC# II

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 12-2017

Client: Haley & Aldrich

Cooler Number:

Thermometer ID: DKS CF, °C 0 Corrected Temp, °C 1.0

ORIGIN ID:MSCA (480) 275-8931
ASHLEY LOCUM
ACCUTEST TEMPE SERVICE CENTER
1741 W. UNIVERSITY DR.
SUITE 149
TEMPE, AZ 85281
UNITED STATES US

SHIP DATE: 19DEC17
ACTWGT: 58.00 LB
CAD: 104695527/INET:
DIMS: 24x20x18 IN

BILL RECIPIENT

TO SAMPLE RECEIVING
ACCUTEST LABORATORIES
10165 HARWIN DR.
SUITE 150
HOUSTON TX 77071
(713) 271-4700
REF: HALEY&ALDRICH
INV:
PO:
DEPT:

WED - 20 D
PRIORITY O

TRK# 0201 7710 4547 0336

AB SGRA

TX

DING INSPECTION,
PANY.

TD14014: Chain of Custody
Page 2 of 6

SGS Accutest Sample Receipt Summary

Job Number: TD14014 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (1/1);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☐	☑	☐	☐
2. Trip Blank listed on COC:	☐	☐	☑		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☐	☐	☑		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Sample Receipt Log

Job #: TD14014 **Date / Time Received:** 12/20/2017 10:45:00 AM **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD14014-1	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-1	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-1	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-1	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-1	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-2	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-2	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-2	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-2	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1

Sample Receipt Log

Job #: TD14014 **Date / Time Received:** 12/20/2017 10:45:00 AM **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD14014-3	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-3	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-3	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-3	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-3	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-4	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-4	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-4	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-4	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-5	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1

Sample Receipt Log

Job #: TD14014 **Date / Time Received:** 12/20/2017 10:45:00 AM **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD14014-5	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-5	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-5	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-5	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-MB	E0064801.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-MB	E0064801.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	0.32	1.0	0.30	ug/l	J
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	85%	68-124%

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-MB	E0064801.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

Blank Spike Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-BS	E0064799.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	122	98	46-129
71-43-2	Benzene	25	24.4	98	68-119
108-86-1	Bromobenzene	25	22.3	89	71-119
74-97-5	Bromochloromethane	25	22.9	92	71-118
75-27-4	Bromodichloromethane	25	21.3	85	72-118
75-25-2	Bromoform	25	21.3	85	54-123
104-51-8	n-Butylbenzene	25	24.3	97	66-123
135-98-8	sec-Butylbenzene	25	25.7	103	72-123
98-06-6	tert-Butylbenzene	25	21.9	88	70-124
108-90-7	Chlorobenzene	25	23.0	92	74-120
75-00-3	Chloroethane	25	34.8	139*	61-132
67-66-3	Chloroform	25	22.9	92	73-122
95-49-8	o-Chlorotoluene	25	23.6	94	71-122
106-43-4	p-Chlorotoluene	25	23.2	93	73-120
75-15-0	Carbon disulfide	25	28.5	114	55-140
56-23-5	Carbon tetrachloride	25	23.3	93	68-133
75-34-3	1,1-Dichloroethane	25	26.8	107	72-121
75-35-4	1,1-Dichloroethylene	25	26.8	107	67-140
563-58-6	1,1-Dichloropropene	25	21.0	84	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	20.5	82	47-133
106-93-4	1,2-Dibromoethane	25	22.4	90	69-121
107-06-2	1,2-Dichloroethane	25	20.1	80	68-121
78-87-5	1,2-Dichloropropane	25	24.4	98	72-116
142-28-9	1,3-Dichloropropane	25	22.1	88	70-118
594-20-7	2,2-Dichloropropane	25	26.6	106	57-141
124-48-1	Dibromochloromethane	25	21.8	87	68-119
75-71-8	Dichlorodifluoromethane	25	21.7	87	29-182
156-59-2	cis-1,2-Dichloroethylene	25	26.3	105	72-117
10061-01-5	cis-1,3-Dichloropropene	25	22.1	88	71-118
541-73-1	m-Dichlorobenzene	25	23.5	94	73-117
95-50-1	o-Dichlorobenzene	25	22.5	90	71-117
106-46-7	p-Dichlorobenzene	25	22.4	90	71-116
156-60-5	trans-1,2-Dichloroethylene	25	26.2	105	68-124
10061-02-6	trans-1,3-Dichloropropene	25	22.9	92	72-127
100-41-4	Ethylbenzene	25	23.5	94	71-117
637-92-3	Ethyl tert-Butyl Ether	25	23.0	92	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-BS	E0064799.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	103	82	49-124
87-68-3	Hexachlorobutadiene	25	23.9	96	62-143
98-82-8	Isopropylbenzene	25	26.0	104	74-141
99-87-6	p-Isopropyltoluene	25	24.7	99	72-126
108-10-1	4-Methyl-2-pentanone	125	107	86	54-122
74-83-9	Methyl bromide	25	27.0	108	53-138
74-87-3	Methyl chloride	25	29.8	119	50-145
74-95-3	Methylene bromide	25	21.9	88	71-117
75-09-2	Methylene chloride	25	23.2	93	60-125
78-93-3	Methyl ethyl ketone	125	121	97	51-129
1634-04-4	Methyl Tert Butyl Ether	25	22.9	92	65-119
91-20-3	Naphthalene	25	22.9	92	43-139
103-65-1	n-Propylbenzene	25	24.2	97	72-123
100-42-5	Styrene	25	22.8	91	74-119
75-65-0	Tert Butyl Alcohol	250	213	85	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	22.9	92	74-119
71-55-6	1,1,1-Trichloroethane	25	23.6	94	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	24.0	96	62-121
79-00-5	1,1,2-Trichloroethane	25	23.1	92	70-119
87-61-6	1,2,3-Trichlorobenzene	25	22.2	89	44-144
96-18-4	1,2,3-Trichloropropane	25	21.0	84	61-124
120-82-1	1,2,4-Trichlorobenzene	25	22.7	91	57-132
95-63-6	1,2,4-Trimethylbenzene	25	22.9	92	70-121
108-67-8	1,3,5-Trimethylbenzene	25	24.4	98	66-119
127-18-4	Tetrachloroethylene	25	24.5	98	72-132
108-88-3	Toluene	25	24.0	96	73-119
79-01-6	Trichloroethylene	25	25.0	100	73-121
75-69-4	Trichlorofluoromethane	25	26.0	104	46-152
75-01-4	Vinyl chloride	25	26.5	106	54-126
1330-20-7	Xylene (total)	75	66.8	89	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	86%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-BS	E0064799.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	80-119%
460-00-4	4-Bromofluorobenzene	103%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD14135-2MS	E0064804.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2MSD	E0064805.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2	E0064803.D	10	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	TD14135-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	500 U		1250	1100	88	1250	1080	86	2	46-129/25
71-43-2	Benzene	10 U		250	226	90	250	235	94	4	68-119/12
108-86-1	Bromobenzene	10 U		250	213	85	250	218	87	2	71-119/12
74-97-5	Bromochloromethane	10 U		250	223	89	250	225	90	1	71-118/13
75-27-4	Bromodichloromethane	10 U		250	200	80	250	207	83	3	72-118/16
75-25-2	Bromoform	10 U		250	188	75	250	194	78	3	54-123/17
104-51-8	n-Butylbenzene	10 U		250	226	90	250	230	92	2	66-123/14
135-98-8	sec-Butylbenzene	10 U		250	241	96	250	243	97	1	72-123/13
98-06-6	tert-Butylbenzene	10 U		250	208	83	250	212	85	2	70-124/15
108-90-7	Chlorobenzene	10 U		250	217	87	250	223	89	3	74-120/12
75-00-3	Chloroethane	10 U		250	348	139*	250	348	139*	0	61-132/16
67-66-3	Chloroform	10 U		250	220	88	250	218	87	1	73-122/13
95-49-8	o-Chlorotoluene	10 U		250	220	88	250	223	89	1	71-122/12
106-43-4	p-Chlorotoluene	10 U		250	217	87	250	220	88	1	73-120/12
75-15-0	Carbon disulfide	50 U		250	264	106	250	284	114	7	55-140/24
56-23-5	Carbon tetrachloride	10 U		250	216	86	250	222	89	3	68-133/20
75-34-3	1,1-Dichloroethane	309		250	561	101	250	561	101	0	72-121/14
75-35-4	1,1-Dichloroethylene	1410		250	1620	84	250	1590	72	2	67-140/18
563-58-6	1,1-Dichloropropene	10 U		250	200	80	250	206	82	3	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	20 U		250	189	76	250	193	77	2	47-133/23
106-93-4	1,2-Dibromoethane	10 U		250	216	86	250	219	88	1	69-121/13
107-06-2	1,2-Dichloroethane	10 U		250	197	79	250	198	79	1	68-121/12
78-87-5	1,2-Dichloropropane	10 U		250	231	92	250	230	92	0	72-116/12
142-28-9	1,3-Dichloropropane	10 U		250	215	86	250	217	87	1	70-118/12
594-20-7	2,2-Dichloropropane	10 U		250	261	104	250	273	109	4	57-141/16
124-48-1	Dibromochloromethane	10 U		250	209	84	250	211	84	1	68-119/15
75-71-8	Dichlorodifluoromethane	20 U		250	216	86	250	209	84	3	29-182/23
156-59-2	cis-1,2-Dichloroethylene	9.2	J	250	259	100	250	268	104	3	72-117/13
10061-01-5	cis-1,3-Dichloropropene	10 U		250	208	83	250	214	86	3	71-118/18
541-73-1	m-Dichlorobenzene	10 U		250	219	88	250	224	90	2	73-117/12
95-50-1	o-Dichlorobenzene	10 U		250	213	85	250	218	87	2	71-117/11
106-46-7	p-Dichlorobenzene	10 U		250	211	84	250	217	87	3	71-116/11
156-60-5	trans-1,2-Dichloroethylene	10 U		250	257	103	250	257	103	0	68-124/15
10061-02-6	trans-1,3-Dichloropropene	10 U		250	218	87	250	221	88	1	72-127/17
100-41-4	Ethylbenzene	10 U		250	223	89	250	226	90	1	71-117/12
637-92-3	Ethyl tert-Butyl Ether	10 U		250	219	88	250	225	90	3	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD14135-2MS	E0064804.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2MSD	E0064805.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2	E0064803.D	10	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	TD14135-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	100 U		1250	1000	80	1250	984	79	2	49-124/21
87-68-3	Hexachlorobutadiene	10 U		250	212	85	250	223	89	5	62-143/18
98-82-8	Isopropylbenzene	10 U		250	244	98	250	250	100	2	74-141/13
99-87-6	p-Isopropyltoluene	10 U		250	231	92	250	234	94	1	72-126/13
108-10-1	4-Methyl-2-pentanone	100 U		1250	1040	83	1250	1040	83	0	54-122/20
74-83-9	Methyl bromide	10 U		250	270	108	250	266	106	1	53-138/16
74-87-3	Methyl chloride	10 U		250	295	118	250	322	129	9	50-145/17
74-95-3	Methylene bromide	10 U		250	216	86	250	221	88	2	71-117/12
75-09-2	Methylene chloride	50 U		250	226	90	250	228	91	1	60-125/16
78-93-3	Methyl ethyl ketone	100 U		1250	1130	90	1250	1090	87	4	51-129/22
1634-04-4	Methyl Tert Butyl Ether	10 U		250	223	89	250	230	92	3	65-119/13
91-20-3	Naphthalene	50 U		250	196	78	250	209	84	6	43-139/28
103-65-1	n-Propylbenzene	10 U		250	228	91	250	231	92	1	72-123/13
100-42-5	Styrene	10 U		250	213	85	250	220	88	3	74-119/19
75-65-0	Tert Butyl Alcohol	200 U		2500	1940	78	2500	1920	77	1	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	10 U		250	218	87	250	223	89	2	74-119/14
71-55-6	1,1,1-Trichloroethane	10 U		250	224	90	250	234	94	4	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	10 U		250	232	93	250	233	93	0	62-121/17
79-00-5	1,1,2-Trichloroethane	10 U		250	227	91	250	230	92	1	70-119/13
87-61-6	1,2,3-Trichlorobenzene	10 U		250	187	75	250	199	80	6	44-144/27
96-18-4	1,2,3-Trichloropropane	10 U		250	204	82	250	196	78	4	61-124/16
120-82-1	1,2,4-Trichlorobenzene	10 U		250	200	80	250	211	84	5	57-132/18
95-63-6	1,2,4-Trimethylbenzene	10 U		250	216	86	250	219	88	1	70-121/15
108-67-8	1,3,5-Trimethylbenzene	10 U		250	226	90	250	231	92	2	66-119/15
127-18-4	Tetrachloroethylene	6.3	J	250	236	92	250	244	95	3	72-132/14
108-88-3	Toluene	10 U		250	230	92	250	234	94	2	73-119/13
79-01-6	Trichloroethylene	10 U		250	230	92	250	239	96	4	73-121/13
75-69-4	Trichlorofluoromethane	10 U		250	261	104	250	264	106	1	46-152/25
75-01-4	Vinyl chloride	558		250	800	97	250	791	93	1	54-126/17
1330-20-7	Xylene (total)	30 U		750	629	84	750	645	86	3	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD14135-2	Limits
1868-53-7	Dibromofluoromethane	102%	103%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	85%	85%	84%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD14135-2MS	E0064804.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2MSD	E0064805.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2	E0064803.D	10	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Surrogate Recoveries	MS	MSD	TD14135-2	Limits
2037-26-5	Toluene-D8	100%	99%	100%	80-119%
460-00-4	4-Bromofluorobenzene	101%	100%	98%	72-126%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS829-MB	SS018859.D	1	12/29/17	SC	n/a	n/a	GSS829

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS829-BS	SS018856.D	1	12/29/17	SC	n/a	n/a	GSS829
GSS829-BSD [a]	SS018857.D	1	12/29/17	SC	n/a	n/a	GSS829

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
74-82-8	Methane	21.5	18.2	85	18.9	88	4	68-139/30
74-85-1	Ethene	57.4	49.0	85	50.5	88	3	52-145/30
74-84-0	Ethane	43.3	45.9	106	46.6	108	2	68-131/30

(a) Insufficient sample for MS/MSD. AZ:Q9

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD14014
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP45597/GN86767	0.50	0.0	mg/l	10	10.8	108.0	90-110%
Iron, Ferrous	GN86736	0.10	0.0	mg/l	4.0	4.0	100.0	94-103%
Nitrogen, Nitrate	GP45570/GN86738	0.50	0.0	mg/l	10	11.0	110.0	90-110%
Nitrogen, Nitrite	GP45570/GN86738	0.50	0.0	mg/l	10	10.9	109.0	90-110%
Sulfate	GP45597/GN86767	0.60	0.0	mg/l	10	10.2	102.0	90-110%

Associated Samples:
Batch GN86736: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
Batch GP45570: TD14014-1
Batch GP45597: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD14014
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chloride	GP45597/GN86767	TD14014-1	mg/l	631	592	6.4	0-20%
Fluoride	GP45597/GN86767	TD14014-1	mg/l	0.0	0.0	0.0	0-20%
Iron, Ferrous	GN86736	TD14014-1	mg/l	0.0	0.0	0.0	0-10%
Nitrogen, Nitrate	GP45570/GN86738	TD14014-1	mg/l	15.6	17.0	8.6	0-20%
Nitrogen, Nitrite	GP45570/GN86738	TD14014-1	mg/l	0.0	0.0	0.0	0-20%
Sulfate	GP45597/GN86767	TD14014-1	mg/l	355	335	5.8	0-20%

Associated Samples:
Batch GN86736: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
Batch GP45570: TD14014-1
Batch GP45597: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD14014
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP45597/GN86767	TD14014-1	mg/l	631	500	1230	119.8	80-120%
Fluoride	GP45597/GN86767	TD14014-1	mg/l	0.0	500	553	110.6	80-120%
Iron, Ferrous	GN86736	TD14014-1	mg/l	0.0	4.0	4.1	102.0	89-106%
Nitrogen, Nitrate	GP45570/GN86738	TD14014-1	mg/l	15.6	10	29.9	143.0N(a)	80-120%
Nitrogen, Nitrite	GP45570/GN86738	TD14014-1	mg/l	0.0	10	10.9	109.0	80-130%
Sulfate	GP45597/GN86767	TD14014-1	mg/l	355	500	894	107.8	80-120%

Associated Samples:
Batch GN86736: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
Batch GP45570: TD14014-1
Batch GP45597: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Outside control limits due to matrix interference.

Misc. Forms

Custody Documents and Other Forms

(SGS Orlando, FL)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD14014

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-121917		12/19/17	9:10:00 AM		AQ	3	3								X	
2	PT-2S-90-121917		12/19/17	10:35:00 AM		AQ	3	3								X	
3	PTLB-7R-90-121917		12/19/17	11:45:00 AM		AQ	3	3								X	
4	ISCO-1-S-85-121917		12/19/17	1:20:00 PM		AQ	3	3								X	
5	ISCO-1-D-98-121917		12/19/17	2:30:00 PM		AQ	3	3								X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY
- ☒ other Due 12/28/2017

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format
- ☒ Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By: 1	Relinquished By: 2	Date Time:	Received By: 2
	12/22/17	FX	FX	12-22-17	11:30
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # ☐ Intact ☐ Not Intact	Preserved where applicable ☐	On Ice ☐ Cooler Temp. 3.4

10.1 10

TD14014: Chain of Custody
Page 1 of 2
SGS Orlando, FL

SGS Accutest Sample Receipt Summary

Job Number: TD14014 **Client:** ALGC **Project:** PLYMOUTH

Date / Time Received: 12/22/2017 11:30:00 AM **Delivery Method:** FX **Airbill #'s:** 5642 4621 5868

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (3.4);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: JORGEC Date: 12/22/2017 11:30:00 Reviewer: BR Date: 12/22/2017

10.1 10

TD14014: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

(SGS Orlando, FL)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1874-MB	Z49925.D	1	12/26/17	MM	n/a	n/a	VZ1874

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-1, TD14014-2, TD14014-4, TD14014-5

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	102%	74-125%
2037-26-5	Toluene-D8	106%	88-111%

Method Blank Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1875-MB	Z49956.D	1	12/27/17	MM	n/a	n/a	VZ1875

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	89%	74-125%
2037-26-5	Toluene-D8	104%	88-111%

Blank Spike Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1874-BS	Z49923.D	1	12/26/17	MM	n/a	n/a	VZ1874

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-1, TD14014-2, TD14014-4, TD14014-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.2	91	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	102%	74-125%
2037-26-5	Toluene-D8	103%	88-111%

11.2.1

11

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1875-BS	Z49955.D	1	12/27/17	MM	n/a	n/a	VZ1875

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.0	90	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	90%	74-125%
2037-26-5	Toluene-D8	102%	88-111%

11.2.2

11

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA50459-1MS	Z49946.D	1	12/26/17	MM	n/a	n/a	VZ1874
FA50459-1MSD	Z49947.D	1	12/26/17	MM	n/a	n/a	VZ1874
FA50459-1	Z49926.D	1	12/26/17	MM	n/a	n/a	VZ1874

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-1, TD14014-2, TD14014-4, TD14014-5

CAS No.	Compound	FA50459-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.82	J	20	18.0	86	20	18.6	89	3	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA50459-1	Limits
17060-07-0	1,2-Dichloroethane-D4	93%	93%	106%	74-125%
2037-26-5	Toluene-D8	99%	102%	103%	88-111%

11.3.1

11

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA50371-2MS	Z49966.D	1	12/27/17	MM	n/a	n/a	VZ1875
FA50371-2MSD	Z49967.D	1	12/27/17	MM	n/a	n/a	VZ1875
FA50371-2	Z49959.D	1	12/27/17	MM	n/a	n/a	VZ1875

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-3

CAS No.	Compound	FA50371-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	28.6		20	46.3	89	20	45.8	86	1	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA50371-2	Limits
17060-07-0	1,2-Dichloroethane-D4	87%	90%	90%	74-125%
2037-26-5	Toluene-D8	102%	104%	103%	88-111%

11.3.2

11

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Scott, LA)

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD14014

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE .NA	LAB USE ONLY
1	PT-3-90-121917		12/19/17	9:10:00 AM		AQ	1			1						X	/
2	PT-2S-90-121917		12/19/17	10:35:00 AM		AQ	1			1						X	/
3	PTLB-7R-90-121917		12/19/17	11:45:00 AM		AQ	1			1						X	/
4	ISCO-1-S-85-121917		12/19/17	1:20:00 PM		AQ	1			1						X	/
5	ISCO-1-D-98-121917		12/19/17	2:30:00 PM		AQ	1			1						X	/

RUSH

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 12/28/2017

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

(3W2)

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 S. James	12-21-17 1800	1 SGS	2 SGS		2 Dilman Allen
3 Dilman Allen	12217 2300	3 [signature] 12-22-17 0700			4
5		5 12-22-17	Custody Seal # (Sun Cooler) ☑ Intact ☐ Not intact	Preserved where applicable ☑	On Ice ☑ Cooler Temp. (2.6 W 4.3°)

12.1

12

TD14014: Chain of Custody
Page 1 of 2
SGS Scott, LA

SGS Accutest Sample Receipt Summary

Job Number: TD14014 **Client:** SGS (TX) **Project:** PLYMOUTH TUBE GW

Date / Time Received: 12/22/2017 7:40:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2.6/2.6); DV439

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV439;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Comments

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

12.1

12

TD14014: Chain of Custody
Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Scott, LA)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/22/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	10	45		
Antimony	6.0	1.5	3.4		
Arsenic	10	1.5	1.9		
Barium	10	.25	1		
Beryllium	4.0	.04	.2		
Boron	100	1.4	8.3		
Cadmium	5.0	.13	1.3		
Calcium	100	5.9	9.2		
Chromium	10	.35	.2		
Cobalt	10	.15	1.4		
Copper	10	.98	4		
Iron	100	4.3	22	0.20	<100
Lead	10	.79	2.7		
Lithium	10	2	5.2		
Magnesium	100	19	72		
Manganese	10	3.6	.3		
Molybdenum	10	.19	1.1		
Nickel	10	.67	1.8		
Potassium	500	37	140		
Selenium	10	1.7	5.3		
Silver	10	.42	2		
Sodium	500	89	78	-120	<500
Strontium	10	.08	.2		
Thallium	5.0	1.4	4.8		
Tin	10	.51	2.2		
Titanium	10	.34	1.2		
Vanadium	10	.28	.8		
Zinc	20	9.9	.7		

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 12/22/17

Metal	LA39947-2 Original	MS	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron	6580	7560	1000	98.0	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium	6090	16800	10000	107.1	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 12/22/17

Metal	LA39947-2 Original	MSD	Spikelot ICPSPIKE1%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron	6580	7290	1000	71.0 (a)	3.6	20
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium	6090	16100	10000	100.1	4.3	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/22/17

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron	1030	1000	103.0	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	10300	10000	103.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/22/17

Metal	LA39947-2 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron	6580	6080	7.7	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	6090	5180	15.0*(a)	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference or sample non-homogeneity.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-003

128159-003

SGS Job Number: TD18251

Sampling Date: 03/15/18

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: **122**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-18-28) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **10**
Section 4: Sample Results **12**
4.1: TD18251-1: PT-3-90-031518 13
4.2: TD18251-2: PT-2S-90-031518 20
4.3: TD18251-3: LB-7R-90-031518 27
4.4: TD18251-4: ISCO-1-D-98-031518 34
4.5: TD18251-5: ISCO-1-S-85-031518 41
4.6: TD18251-6: ERB-031518 48
4.7: TD18251-7: ISCO-1-S-85-031518-DUP 51
Section 5: Misc. Forms **54**
5.1: Arizona Qualifiers 55
5.2: Chain of Custody 56
Section 6: MS Volatiles - QC Data Summaries **62**
6.1: Method Blank Summary 63
6.2: Blank Spike Summary 75
6.3: Blank Spike/Blank Spike Duplicate Summary 84
6.4: Matrix Spike/Matrix Spike Duplicate Summary 87
Section 7: GC Volatiles - QC Data Summaries **96**
7.1: Method Blank Summary 97
7.2: Blank Spike/Blank Spike Duplicate Summary 98
Section 8: General Chemistry - QC Data Summaries **99**
8.1: Method Blank and Spike Results Summary 100
8.2: Duplicate Results Summary 101
8.3: Matrix Spike Results Summary 102
Section 9: Misc. Forms (SGS Orlando, FL) **103**
9.1: Chain of Custody 104
Section 10: MS Volatiles - QC Data (SGS Orlando, FL) **107**
10.1: Method Blank Summary 108
10.2: Blank Spike Summary 110
10.3: Matrix Spike/Matrix Spike Duplicate Summary 112
Section 11: Misc. Forms (SGS Scott, LA) **114**
11.1: Chain of Custody 115
Section 12: Metals Analysis - QC Data (SGS Scott, LA) **117**
12.1: Prep QC MP10963: Fe,Na 118

SGS North America Inc.

Sample Summary

Haley & Aldrich

Job No: TD18251

Plymouth Tube Groundwater Monitoring - 128159-003
Project No: 128159-003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD18251-1	03/15/18	08:30		03/16/18	AQ	Ground Water	PT-3-90-031518
TD18251-2	03/15/18	11:20		03/16/18	AQ	Ground Water	PT-2S-90-031518
TD18251-3	03/15/18	12:30		03/16/18	AQ	Ground Water	LB-7R-90-031518
TD18251-4	03/15/18	14:10		03/16/18	AQ	Ground Water	ISCO-1-D-98-031518
TD18251-5	03/15/18	15:25		03/16/18	AQ	Ground Water	ISCO-1-S-85-031518
TD18251-6	03/15/18	13:00		03/16/18	AQ	Ground Water	ERB-031518
TD18251-7	03/15/18	15:30		03/16/18	AQ	Ground Water	ISCO-1-S-85-031518-DUP

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD18251
Site:	Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	3/28/2018 10:24:35 A

7 Samples were collected on 03/15/2018 and received intact at SGS North America Inc (SGS) on 03/16/2018 and properly preserved in 1 cooler at 3 Deg C. The samples received an Accutest job number of TD18251. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1926

- All data for batch F:MS39813 was analyzed at SGS North America Inc. - Orlando, FL.

Matrix: AQ **Batch ID:** F:VZ1927

- The following samples were run outside of holding time for method SW846 8260B BY SIM: TD18251-1, TD18251-3, TD18251-4, TD18251-5
- All data for batch F:MS39813 was analyzed at SGS North America Inc. - Orlando, FL.

MS Volatiles By Method SW846 8260C

Matrix: AQ **Batch ID:** VE2938

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- VE2938-BSD: AZ:Q9
- TD18251-6 for 1,1-Dichloroethylene: AZ:V1
- TD18251-6 for Bromoform: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD18251-6 for Acetone: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD18251-6 for Methylene chloride: AZ:V1
- TD18251-6 for Trichlorofluoromethane: AZ:V1
- TD18251-6 for Tert Butyl Alcohol: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD18251-6 for 1,1-Dichloropropene: AZ:V1
- TD18251-6 for 1,2-Dichloroethane-D4: AZ:S4
- TD18251-6 for Chloroethane: AZ:V1
- TD18251-6 for 2-Hexanone: AZ:V1

Matrix: AQ **Batch ID:** VE2944

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD18194-1MS, TD18194-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Methyl ethyl ketone are outside control limits.
- Matrix Spike Recovery(s) for Acetone, Methyl ethyl ketone are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Acetone, Methyl ethyl ketone are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Bromoform are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- TD18251-2 for Methyl ethyl ketone: AZ:V1,L5
- TD18251-2 for Tert Butyl Alcohol: AZ:V1
- VE2944-BS for Methyl ethyl ketone: AZ:L5
- TD18251-2 for Acetone: AZ:V1

Matrix: AQ **Batch ID:** VK2209

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD18251-2MS, TD18251-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Trichloroethylene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for Trichloroethylene are outside control limits. Probable cause due to matrix interference.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- TD18251-2: Sample used for QC purposes only.
- TD18251-4 for Chloroform: AZ:E4
- TD18251-7 for Bromoform: AZ:E4

MS Volatiles By Method SW846 8260C

Matrix: AQ	Batch ID: VK2209

- TD18251-3 for Acetone: AZ:E4
- TD18251-7 for 1,2-Dichloroethane: AZ:E4
- TD18251-5 for Chloroform: AZ:E4
- TD18251-7 for Chloroform: AZ:E4
- TD18251-4 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-5 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-7 for Bromodichloromethane: AZ:E4
- TD18251-5 for 1,1-Dichloroethane: AZ:E4
- TD18251-4 for 1,1-Dichloroethane: AZ:E4
- TD18251-5 for Bromoform: AZ:E4
- TD18251-3 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-7 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-7 for 1,1-Dichloroethane: AZ:E4

Matrix: AQ	Batch ID: VK2211

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD18111-1MS, TD18111-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- TD18251-1 for cis-1,2-Dichloroethylene: AZ:E4

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ	Batch ID: GSS839

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- GSS839-BSD: Insufficient sample available for MS/MSD. AZ:Q9

Metals Analysis By Method SW846 6010C

Matrix: AQ	Batch ID: L:MP10963

- All data for batch L:MP10963 was analyzed at SGS North America Inc. - Scott, LA.

General Chemistry By Method EPA 300.0

Matrix: AQ	Batch ID: GP46777

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18060-1DUP, TD18060-1MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 2320B-2011

Matrix: AQ	Batch ID: GN88569

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP, TD18251-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ	Batch ID: GN88487

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP, TD18251-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD18251-1, TD18251-2, TD18251-3 Sample received and analyzed out of holding time.
- TD18251-4 for Iron, Ferrous: Sample received and analyzed out of holding time.
- TD18251-5 for Iron, Ferrous: Sample received and analyzed out of holding time.

General Chemistry By Method SM18 2320B

Matrix: AQ	Batch ID: GN88570

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP were used as the QC samples for Alkalinity, Bicarbonate.

Matrix: AQ	Batch ID: GN88571

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP were used as the QC samples for Alkalinity, Carbonate.

SGS certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS and as stated on the COC. SGS certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Quality Manual except as noted above. This report is to be used in its entirety. SGS is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Houston, TX	**Job No**	TD18251
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	3/23/2018 12:15:58 P

5 samples, 0 trip blanks and 0 field blanks were collected on 03/15/2018 and were received intact at Accutest on 03/16/2018, properly preserved and cool at 1.6 Deg C. These Samples received an Accutest job number of TD18251. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP10963

- Sample(s) LA42290-1MS, LA42290-1MSD, LA42290-1SDL were used as the QC samples for metals.
- Matrix Spike Duplicate Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- TD18251-5 for Sodium: AZ:D2
- TD18251-4 for Sodium: AZ:D2
- TD18251-3 for Sodium: AZ:D2
- TD18251-2 for Sodium: AZ:D2
- TD18251-1 for Sodium: AZ:D2

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS Houston, TX **Job No:** TD18251

Site: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003 **Report Date** 3/27/2018 6:08:58 PM

5 Samples were collected on 03/15/2018 and were received at SGS North America Inc - Orlando on 03/17/2018 properly preserved, at 2.8 Deg. C and intact. These Samples received an SGS Orlando job number of TD18251. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1926

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) TD18246-1MS, TD18246-1MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike.

RPD(s) for MSD for 1,4-Dioxane are outside control limits for sample TD18246-1MSD. Probable cause is due to sample non-homogeneity. AZ:R9

Matrix: AQ **Batch ID:** VZ1927

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA52696-3MS, FA52696-3MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike.

TD18251-1: Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1

TD18251-4: Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Date: March 27, 2018

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD18251
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 03/15/18

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD18251-1	**PT-3-90-031518**					
1,4-Dioxane [a]		6.6	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		20.6	1.0	0.30	ug/l	SW846 8260C
cis-1,2-Dichloroethylene [b]		0.39 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		172	1.0	0.30	ug/l	SW846 8260C
Iron [c]		127	100		ug/l	SW846 6010C
Sodium [d]		502000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		285	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		285	5.0		mg/l	SM 2320B-2011
Chloride		621	25		mg/l	EPA 300.0
Sulfate		380	25		mg/l	EPA 300.0
TD18251-2	**PT-2S-90-031518**					
1,4-Dioxane [e]		42.2	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		104	5.0	1.5	ug/l	SW846 8260C
Trichloroethylene		645	5.0	1.5	ug/l	SW846 8260C
Sodium [d]		524000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		260	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		260	5.0		mg/l	SM 2320B-2011
Chloride		723	25		mg/l	EPA 300.0
Sulfate		394	25		mg/l	EPA 300.0
TD18251-3	**LB-7R-90-031518**					
1,4-Dioxane [e]		3.3	1.0	0.30	ug/l	SW846 8260B BY SIM
Acetone [b]		20.5 J	50	10	ug/l	SW846 8260C
Bromoform		1.4	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		7.0	1.0	0.30	ug/l	SW846 8260C
Sodium [d]		1350000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		16.0	5.0		mg/l	SM18 2320B
Alkalinity, Carbonate		299	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		415	5.0		mg/l	SM 2320B-2011
Chloride		683	50		mg/l	EPA 300.0
Sulfate		1050	50		mg/l	EPA 300.0
TD18251-4	**ISCO-1-D-98-031518**					
1,4-Dioxane [a]		5.7	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform		1.2	1.0	0.30	ug/l	SW846 8260C
Chloroform [b]		0.42 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [b]		0.44 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		17.9	1.0	0.30	ug/l	SW846 8260C
Iron [c]		1460	100		ug/l	SW846 6010C

Summary of Hits

Job Number: TD18251
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 03/15/18

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Sodium [d]		1510000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		55.0	5.0		mg/l	SM18 2320B
Alkalinity, Carbonate		460	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		560	5.0		mg/l	SM 2320B-2011
Chloride		670	50		mg/l	EPA 300.0
Sulfate		1430	50		mg/l	EPA 300.0
TD18251-5	**ISCO-1-S-85-031518**					
1,4-Dioxane [e]		22.4	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform [b]		0.61 J	1.0	0.30	ug/l	SW846 8260C
Chloroform [b]		0.46 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [b]		0.48 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		164	1.0	0.30	ug/l	SW846 8260C
Iron [c]		357	100		ug/l	SW846 6010C
Sodium [d]		1000000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		173	5.0		mg/l	SM18 2320B
Alkalinity, Carbonate		196	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		375	5.0		mg/l	SM 2320B-2011
Chloride		666	50		mg/l	EPA 300.0
Sulfate		784	50		mg/l	EPA 300.0
TD18251-6	**ERB-031518**					
No hits reported in this sample.						
TD18251-7	**ISCO-1-S-85-031518-DUP**					
Bromodichloromethane [b]		0.40 J	1.0	0.30	ug/l	SW846 8260C
Bromoform [b]		0.56 J	1.0	0.30	ug/l	SW846 8260C
Chloroform [b]		0.50 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [b]		0.56 J	1.0	0.30	ug/l	SW846 8260C
1,2-Dichloroethane [b]		0.34 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		160	1.0	0.30	ug/l	SW846 8260C

(a) Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1 Analysis performed at SGS Orlando, FL.
(b) AZ:E4
(c) Analysis performed at SGS Scott, LA. Cert# AZ0805
(d) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805
(e) Analysis performed at SGS Orlando, FL.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359271.D	1	03/23/18 13:19	FI	n/a	n/a	VK2211
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	20.6	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene [a]	0.39	1.0	0.30	ug/l	J
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	172	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		72-122%
17060-07-0	1,2-Dichloroethane-D4	108%		68-124%
2037-26-5	Toluene-D8	98%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51202.D	1	03/26/18 14:54	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	6.6	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		74-125%
2037-26-5	Toluene-D8	108%		88-111%

(a) Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1
Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019063.D	1	03/26/18 15:36	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	127	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	502000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	285	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	285	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	621	25	mg/l	50	03/20/18 18:27	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	380	25	mg/l	50	03/20/18 18:27	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0066339.D	5	03/26/18 12:18	FI	n/a	n/a	VE2944
Run #2 [a]	K359218.D	10	03/22/18 15:44	FI	n/a	n/a	VK2209

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	250	50	ug/l	
71-43-2	Benzene	ND	5.0	1.5	ug/l	
108-86-1	Bromobenzene	ND	5.0	1.5	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.5	ug/l	
75-27-4	Bromodichloromethane	ND	5.0	1.5	ug/l	
75-25-2	Bromoform	ND	5.0	1.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.5	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.5	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	1.5	ug/l	
108-90-7	Chlorobenzene	ND	5.0	1.5	ug/l	
75-00-3	Chloroethane	ND	5.0	1.7	ug/l	
67-66-3	Chloroform	ND	5.0	1.5	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.5	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	1.5	ug/l	
75-15-0	Carbon disulfide	ND	25	3.7	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	2.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	1.5	ug/l	
75-35-4	1,1-Dichloroethylene	104	5.0	1.5	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	1.5	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	10	1.7	ug/l	
106-93-4	1,2-Dibromoethane	ND	5.0	1.5	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	1.5	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	1.5	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	1.5	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.5	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	1.5	ug/l	
75-71-8	Dichlorodifluoromethane	ND	10	2.5	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.5	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.5	ug/l	
541-73-1	m-Dichlorobenzene	ND	5.0	1.5	ug/l	
95-50-1	o-Dichlorobenzene	ND	5.0	1.5	ug/l	
106-46-7	p-Dichlorobenzene	ND	5.0	1.5	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.5	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.5	ug/l	
100-41-4	Ethylbenzene	ND	5.0	1.5	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	5.0	1.5	ug/l	
591-78-6	2-Hexanone	ND	50	5.8	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	1.5	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	50	12	ug/l	
74-83-9	Methyl bromide	ND	5.0	2.4	ug/l	
74-87-3	Methyl chloride	ND	5.0	1.5	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	25	6.3	ug/l	
78-93-3	Methyl ethyl ketone [c]	ND	50	13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	5.0	1.5	ug/l	
91-20-3	Naphthalene	ND	25	2.5	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	1.5	ug/l	
100-42-5	Styrene	ND	5.0	1.5	ug/l	
75-65-0	Tert Butyl Alcohol [b]	ND	100	15	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	1.5	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.5	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.5	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.5	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.5	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	1.9	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.5	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	1.5	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	1.5	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	1.5	ug/l	
108-88-3	Toluene	ND	5.0	1.5	ug/l	
79-01-6	Trichloroethylene	645	5.0	1.5	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	1.5	ug/l	
75-01-4	Vinyl chloride	ND	5.0	1.5	ug/l	
1330-20-7	Xylene (total)	ND	15	3.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%	96%	72-122%
17060-07-0	1,2-Dichloroethane-D4	101%	106%	68-124%
2037-26-5	Toluene-D8	102%	98%	80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%	98%	72-126%

(a) Sample used for QC purposes only.
(b) AZ:V1
(c) AZ:V1,L5

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51169.D	1	03/23/18 12:52	AFL	n/a	n/a	F:VZ1926
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	42.2	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	95%		74-125%
2037-26-5	Toluene-D8	108%		88-111%

(a) Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019064.D	1	03/26/18 15:50	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	524000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	260	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	260	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	723	25	mg/l	50	03/20/18 19:15	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	394	25	mg/l	50	03/20/18 19:15	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359212.D	1	03/22/18 13:23	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	20.5	50	10	ug/l	J
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	1.4	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	7.0	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	93%		80-119%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51200.D	1	03/26/18 14:11	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	3.3	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		74-125%
2037-26-5	Toluene-D8	95%		88-111%

(a) Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019065.D	1	03/26/18 16:12	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	1350000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	16.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	299	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	415	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	683	50	mg/l	100	03/20/18 19:31	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	1050	50	mg/l	100	03/20/18 19:31	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359213.D	1	03/22/18 13:47	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	1.2	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.42	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.44	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	17.9	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	88%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51199.D	1	03/26/18 13:49	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	5.7	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		74-125%
2037-26-5	Toluene-D8	102%		88-111%

(a) Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1
Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019066.D	1	03/26/18 16:26	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	1460	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	1510000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	55.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	460	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	560	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	670	50	mg/l	100	03/20/18 19:47	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	1430	50	mg/l	100	03/20/18 19:47	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359214.D	1	03/22/18 14:10	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	0.61	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.46	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.48	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	164	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	88%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51201.D	1	03/26/18 14:32	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	22.4	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	99%		74-125%
2037-26-5	Toluene-D8	101%		88-111%

(a) Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019067.D	1	03/26/18 16:44	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	357	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	1000000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	173	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	196	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	375	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	666	50	mg/l	100	03/20/18 20:03	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	784	50	mg/l	100	03/20/18 20:03	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ERB-031518		
Lab Sample ID:	TD18251-6	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0066201.D	1	03/19/18 23:22	FI	n/a	n/a	VE2938
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene [b]	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene [b]	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-031518		
Lab Sample ID:	TD18251-6	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone [b]	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride [b]	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol [a]	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	125% [c]		68-124%
2037-26-5	Toluene-D8	105%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-031518		
Lab Sample ID:	TD18251-6	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	107%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
(b) AZ:V1
(c) AZ:S4

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518-DUP		
Lab Sample ID:	TD18251-7	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359215.D	1	03/22/18 14:33	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane [a]	0.40	1.0	0.30	ug/l	J
75-25-2	Bromoform [a]	0.56	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.50	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.56	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane [a]	0.34	1.0	0.30	ug/l	J
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518-DUP		
Lab Sample ID:	TD18251-7	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	160	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	88%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518-DUP		
Lab Sample ID:	TD18251-7	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L5	The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
S4	Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.
V9	CCV recovery was below method acceptance limits.

1 of 1

SGS

PHOENIX ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking # 7801 0038 7845
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job # TD18251

Client / Reporting Information

Company Name: HALEY + ALDRICH
Address: 400 E VAN BUREN ST #545
City: PHOENIX State: AZ Zip: 85004
Project Contact: BRUCE TRAVERS
Phone #: 480-244-5891
Samplers's Name: KFORD / S.HENSEL.

Project Information

Project Name: PLYMOUTH TUBE
Street: W. WILLIS
City: CHANDLER State: AZ
Project #: 128159-003
EMAIL:
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	8260 SIM (1,4 Dioxane)	EPA 300 - SULFATE	SW846 6010/6020 TOTAL IRON	6010/6020 FERROUS IRON FIELD FILTERED 48 hrs	RSK 175 Methane Ethane, Ethene	2320B - Alkalinity	EPA 300 - Chloride	6010/6020 - Sodium		
1	PT-3-90-031518	3/15/18	0830	KF/SH	GW	11	8		1		2				X	X	X	X	X	X	X	X	X		
2	PT-25-90-031518	↓	1120	↓	GW	11	8		1		2				X	X	X	X	X	X	X	X	X		
3	LB-7R-90-031518	↓	1230	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X		
4	ISCO-1-D-98-031518	↓	1410	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X		
5	ISCO-1-S-85-031518	↓	1525	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X		
6	ERB-031518	↓	1300	↓	↓	3	3								X										
7	ISCO-1-S-85-031518-DUP	↓	1530	↓	↓	3	3								X										
	TRIP BLANK														X										

Matrix Codes: WW- Wastewater; GW- Ground Water; SW- Surface Water; SO- Soil; OI-Oil; WP-Wipe; LIQ - Non-aqueous Liquid; AIR; DW- Drinking Water (Perchlorate Only)

LAB USE ONLY

TAGGED BY:

Turnaround Time (Business days)

- 10 Day
- 5 Day
- 3 Day
- 2 Day
- 1 Day
- Same Day

Approved By:/ Date:

Std

Emergency T/A data available VIA Lablink

Data Deliverable Information

- Commercial "A" - Results only
- Commercial "B" - Results with QC summaries
- Commerical "B+" - Results, QC, and chromatograms
- FULT1 - Level 4 data package
- EDF for Geotracker — EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

VERIFIED BY: EL

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3-15-18 1700	1	2	3/15/18 1745	2 fed Ex
Relinquished by: FedEx	Date Time:	Received By: 1100 3/16/18	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Appropriate Bottle / Pres. Y / N	Headspace Y / N
5		5		Labels match Coc? Y / N	Separate Receiving Check List used: Y / N

On Ice Y / N — Cooler Temp. 3.0 oC

5.2 5

SGS ACCUTEST

COOLER TEMP FORM

TC# TD18251

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 3-16-18

Client: Hulings Aldrich

Cooler Number:

Thermometer ID: IR4 CF, °C 0.0 Corrected Temp, °C 3.0

SAMPLES CONTAINED IN COOLER

(1) 1LLNP
(1) 250 NP
(1) 250 SUB
(6) VOA
(2) 4oz

TRK# 0201 7801 0038 7845

AB SGF

3/16

Form: SM027-06 Rev 10/24/2016

5.2 5

TD18251: Chain of Custody
Page 2 of 6

SGS Sample Receipt Summary

Job Number: TD18251 **Client:** HALEY AND ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: **Delivery Method:** **Airbill #'s:** 780100387845

No. Coolers: 1 **Therm ID:** IR-4; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (3/3);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☑	☐	☐	☐
2. Trip Blank listed on COC:	☑	☐	☐		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☐	☑
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments No tripblanks received.
Feeros Iron received out of hold time, proceed per PM(AP)

Sample Receipt Log

Job #: TD18251 **Date / Time Received:** 3/16/2018 11:00:00 AM **Initials:** DS

Client: HALEY AND ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD18251-1	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-1	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-1	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-2	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-2	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-2	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3

Sample Receipt Log

Job #: TD18251 **Date / Time Received:** 3/16/2018 11:00:00 AM **Initials:** DS

Client: HALEY AND ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD18251-3	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-3	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-3	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-4	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-4	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-4	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-5	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3

Sample Receipt Log

Job #: TD18251 **Date / Time Received:** 3/16/2018 11:00:00 AM **Initials:** DS

Client: HALEY AND ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD18251-5	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-5	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
	TD18251-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-MB	E0066195.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-MB	E0066195.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	121%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-MB	E0066195.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	105%	72-126%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-MB	K359208.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-MB	K359208.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	95%	72-122%
17060-07-0	1,2-Dichloroethane-D4	105%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-MB	K359208.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-MB	K359267.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-MB	K359267.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	0.48	1.0	0.40	ug/l	J
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-MB	K359267.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-MB	E0066332.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-MB	E0066332.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	97%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-MB	E0066332.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	101%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-BS	K359205.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	126	101	46-129
71-43-2	Benzene	25	23.5	94	68-119
108-86-1	Bromobenzene	25	21.9	88	71-119
74-97-5	Bromochloromethane	25	24.6	98	71-118
75-27-4	Bromodichloromethane	25	25.4	102	72-118
75-25-2	Bromoform	25	20.9	84	54-123
104-51-8	n-Butylbenzene	25	23.3	93	66-123
135-98-8	sec-Butylbenzene	25	22.9	92	72-123
98-06-6	tert-Butylbenzene	25	22.4	90	70-124
108-90-7	Chlorobenzene	25	22.6	90	74-120
75-00-3	Chloroethane	25	23.2	93	61-132
67-66-3	Chloroform	25	23.5	94	73-122
95-49-8	o-Chlorotoluene	25	22.3	89	71-122
106-43-4	p-Chlorotoluene	25	22.6	90	73-120
75-15-0	Carbon disulfide	25	27.6	110	55-140
56-23-5	Carbon tetrachloride	25	25.8	103	68-133
75-34-3	1,1-Dichloroethane	25	24.4	98	72-121
75-35-4	1,1-Dichloroethylene	25	25.3	101	67-140
563-58-6	1,1-Dichloropropene	25	25.6	102	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	24.7	99	47-133
106-93-4	1,2-Dibromoethane	25	23.0	92	69-121
107-06-2	1,2-Dichloroethane	25	24.5	98	68-121
78-87-5	1,2-Dichloropropane	25	23.3	93	72-116
142-28-9	1,3-Dichloropropane	25	21.8	87	70-118
594-20-7	2,2-Dichloropropane	25	27.7	111	57-141
124-48-1	Dibromochloromethane	25	25.4	102	68-119
75-71-8	Dichlorodifluoromethane	25	22.9	92	29-182
156-59-2	cis-1,2-Dichloroethylene	25	23.6	94	72-117
10061-01-5	cis-1,3-Dichloropropene	25	23.2	93	71-118
541-73-1	m-Dichlorobenzene	25	22.4	90	73-117
95-50-1	o-Dichlorobenzene	25	21.9	88	71-117
106-46-7	p-Dichlorobenzene	25	21.5	86	71-116
156-60-5	trans-1,2-Dichloroethylene	25	24.5	98	68-124
10061-02-6	trans-1,3-Dichloropropene	25	23.9	96	72-127
100-41-4	Ethylbenzene	25	23.2	93	71-117
637-92-3	Ethyl tert-Butyl Ether	25	21.7	87	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-BS	K359205.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	109	87	49-124
87-68-3	Hexachlorobutadiene	25	22.7	91	62-143
98-82-8	Isopropylbenzene	25	23.2	93	74-141
99-87-6	p-Isopropyltoluene	25	23.0	92	72-126
108-10-1	4-Methyl-2-pentanone	125	111	89	54-122
74-83-9	Methyl bromide	25	26.5	106	53-138
74-87-3	Methyl chloride	25	22.7	91	50-145
74-95-3	Methylene bromide	25	24.1	96	71-117
75-09-2	Methylene chloride	25	22.9	92	60-125
78-93-3	Methyl ethyl ketone	125	110	88	51-129
1634-04-4	Methyl Tert Butyl Ether	25	23.1	92	65-119
91-20-3	Naphthalene	25	21.6	86	43-139
103-65-1	n-Propylbenzene	25	22.4	90	72-123
100-42-5	Styrene	25	23.4	94	74-119
75-65-0	Tert Butyl Alcohol	250	226	90	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	24.4	98	74-119
71-55-6	1,1,1-Trichloroethane	25	26.1	104	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	22.9	92	62-121
79-00-5	1,1,2-Trichloroethane	25	22.9	92	70-119
87-61-6	1,2,3-Trichlorobenzene	25	21.9	88	44-144
96-18-4	1,2,3-Trichloropropane	25	22.1	88	61-124
120-82-1	1,2,4-Trichlorobenzene	25	22.1	88	57-132
95-63-6	1,2,4-Trimethylbenzene	25	21.9	88	70-121
108-67-8	1,3,5-Trimethylbenzene	25	23.1	92	66-119
127-18-4	Tetrachloroethylene	25	23.4	94	72-132
108-88-3	Toluene	25	22.7	91	73-119
79-01-6	Trichloroethylene	25	23.5	94	73-121
75-69-4	Trichlorofluoromethane	25	25.7	103	46-152
75-01-4	Vinyl chloride	25	21.8	87	54-126
1330-20-7	Xylene (total)	75	68.9	92	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	103%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-BS	K359205.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-BS	K359268.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	127	102	46-129
71-43-2	Benzene	25	23.5	94	68-119
108-86-1	Bromobenzene	25	21.6	86	71-119
74-97-5	Bromochloromethane	25	24.0	96	71-118
75-27-4	Bromodichloromethane	25	25.0	100	72-118
75-25-2	Bromoform	25	19.5	78	54-123
104-51-8	n-Butylbenzene	25	23.6	94	66-123
135-98-8	sec-Butylbenzene	25	22.6	90	72-123
98-06-6	tert-Butylbenzene	25	22.4	90	70-124
108-90-7	Chlorobenzene	25	22.8	91	74-120
75-00-3	Chloroethane	25	24.7	99	61-132
67-66-3	Chloroform	25	23.2	93	73-122
95-49-8	o-Chlorotoluene	25	21.8	87	71-122
106-43-4	p-Chlorotoluene	25	22.6	90	73-120
75-15-0	Carbon disulfide	25	24.7	99	55-140
56-23-5	Carbon tetrachloride	25	25.9	104	68-133
75-34-3	1,1-Dichloroethane	25	23.7	95	72-121
75-35-4	1,1-Dichloroethylene	25	25.0	100	67-140
563-58-6	1,1-Dichloropropene	25	25.8	103	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	23.5	94	47-133
106-93-4	1,2-Dibromoethane	25	23.2	93	69-121
107-06-2	1,2-Dichloroethane	25	25.3	101	68-121
78-87-5	1,2-Dichloropropane	25	22.9	92	72-116
142-28-9	1,3-Dichloropropane	25	22.0	88	70-118
594-20-7	2,2-Dichloropropane	25	26.0	104	57-141
124-48-1	Dibromochloromethane	25	24.6	98	68-119
75-71-8	Dichlorodifluoromethane	25	27.1	108	29-182
156-59-2	cis-1,2-Dichloroethylene	25	22.6	90	72-117
10061-01-5	cis-1,3-Dichloropropene	25	22.9	92	71-118
541-73-1	m-Dichlorobenzene	25	22.4	90	73-117
95-50-1	o-Dichlorobenzene	25	21.7	87	71-117
106-46-7	p-Dichlorobenzene	25	21.3	85	71-116
156-60-5	trans-1,2-Dichloroethylene	25	23.6	94	68-124
10061-02-6	trans-1,3-Dichloropropene	25	23.8	95	72-127
100-41-4	Ethylbenzene	25	23.1	92	71-117
637-92-3	Ethyl tert-Butyl Ether	25	21.3	85	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-BS	K359268.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	112	90	49-124
87-68-3	Hexachlorobutadiene	25	24.0	96	62-143
98-82-8	Isopropylbenzene	25	22.8	91	74-141
99-87-6	p-Isopropyltoluene	25	23.1	92	72-126
108-10-1	4-Methyl-2-pentanone	125	112	90	54-122
74-83-9	Methyl bromide	25	28.8	115	53-138
74-87-3	Methyl chloride	25	22.6	90	50-145
74-95-3	Methylene bromide	25	24.4	98	71-117
75-09-2	Methylene chloride	25	22.1	88	60-125
78-93-3	Methyl ethyl ketone	125	121	97	51-129
1634-04-4	Methyl Tert Butyl Ether	25	23.0	92	65-119
91-20-3	Naphthalene	25	21.1	84	43-139
103-65-1	n-Propylbenzene	25	22.0	88	72-123
100-42-5	Styrene	25	23.2	93	74-119
75-65-0	Tert Butyl Alcohol	250	213	85	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	23.9	96	74-119
71-55-6	1,1,1-Trichloroethane	25	25.6	102	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	22.4	90	62-121
79-00-5	1,1,2-Trichloroethane	25	23.3	93	70-119
87-61-6	1,2,3-Trichlorobenzene	25	22.1	88	44-144
96-18-4	1,2,3-Trichloropropane	25	21.9	88	61-124
120-82-1	1,2,4-Trichlorobenzene	25	22.2	89	57-132
95-63-6	1,2,4-Trimethylbenzene	25	22.0	88	70-121
108-67-8	1,3,5-Trimethylbenzene	25	22.7	91	66-119
127-18-4	Tetrachloroethylene	25	23.9	96	72-132
108-88-3	Toluene	25	22.6	90	73-119
79-01-6	Trichloroethylene	25	23.8	95	73-121
75-69-4	Trichlorofluoromethane	25	28.9	116	46-152
75-01-4	Vinyl chloride	25	22.5	90	54-126
1330-20-7	Xylene (total)	75	69.1	92	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-BS	K359268.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-BS	E0066329.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	153	122	46-129
71-43-2	Benzene	25	23.8	95	68-119
108-86-1	Bromobenzene	25	23.8	95	71-119
74-97-5	Bromochloromethane	25	24.0	96	71-118
75-27-4	Bromodichloromethane	25	25.2	101	72-118
75-25-2	Bromoform	25	22.6	90	54-123
104-51-8	n-Butylbenzene	25	25.7	103	66-123
135-98-8	sec-Butylbenzene	25	26.6	106	72-123
98-06-6	tert-Butylbenzene	25	24.9	100	70-124
108-90-7	Chlorobenzene	25	23.4	94	74-120
75-00-3	Chloroethane	25	25.2	101	61-132
67-66-3	Chloroform	25	23.4	94	73-122
95-49-8	o-Chlorotoluene	25	23.7	95	71-122
106-43-4	p-Chlorotoluene	25	24.3	97	73-120
75-15-0	Carbon disulfide	25	30.1	120	55-140
56-23-5	Carbon tetrachloride	25	26.3	105	68-133
75-34-3	1,1-Dichloroethane	25	25.5	102	72-121
75-35-4	1,1-Dichloroethylene	25	25.5	102	67-140
563-58-6	1,1-Dichloropropene	25	24.0	96	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	26.5	106	47-133
106-93-4	1,2-Dibromoethane	25	23.8	95	69-121
107-06-2	1,2-Dichloroethane	25	21.4	86	68-121
78-87-5	1,2-Dichloropropane	25	24.4	98	72-116
142-28-9	1,3-Dichloropropane	25	22.4	90	70-118
594-20-7	2,2-Dichloropropane	25	27.2	109	57-141
124-48-1	Dibromochloromethane	25	26.0	104	68-119
75-71-8	Dichlorodifluoromethane	25	26.5	106	29-182
156-59-2	cis-1,2-Dichloroethylene	25	24.6	98	72-117
10061-01-5	cis-1,3-Dichloropropene	25	25.0	100	71-118
541-73-1	m-Dichlorobenzene	25	24.0	96	73-117
95-50-1	o-Dichlorobenzene	25	22.9	92	71-117
106-46-7	p-Dichlorobenzene	25	22.6	90	71-116
156-60-5	trans-1,2-Dichloroethylene	25	24.9	100	68-124
10061-02-6	trans-1,3-Dichloropropene	25	26.7	107	72-127
100-41-4	Ethylbenzene	25	24.4	98	71-117
637-92-3	Ethyl tert-Butyl Ether	25	23.8	95	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-BS	E0066329.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	133	106	49-124
87-68-3	Hexachlorobutadiene	25	27.4	110	62-143
98-82-8	Isopropylbenzene	25	27.0	108	74-141
99-87-6	p-Isopropyltoluene	25	26.4	106	72-126
108-10-1	4-Methyl-2-pentanone	125	134	107	54-122
74-83-9	Methyl bromide	25	26.6	106	53-138
74-87-3	Methyl chloride	25	26.3	105	50-145
74-95-3	Methylene bromide	25	23.0	92	71-117
75-09-2	Methylene chloride	25	25.1	100	60-125
78-93-3	Methyl ethyl ketone	125	189	151* [a]	51-129
1634-04-4	Methyl Tert Butyl Ether	25	23.7	95	65-119
91-20-3	Naphthalene	25	27.4	110	43-139
103-65-1	n-Propylbenzene	25	25.6	102	72-123
100-42-5	Styrene	25	25.1	100	74-119
75-65-0	Tert Butyl Alcohol	250	276	110	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	24.9	100	74-119
71-55-6	1,1,1-Trichloroethane	25	26.0	104	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	24.3	97	62-121
79-00-5	1,1,2-Trichloroethane	25	23.6	94	70-119
87-61-6	1,2,3-Trichlorobenzene	25	26.0	104	44-144
96-18-4	1,2,3-Trichloropropane	25	22.3	89	61-124
120-82-1	1,2,4-Trichlorobenzene	25	25.0	100	57-132
95-63-6	1,2,4-Trimethylbenzene	25	24.2	97	70-121
108-67-8	1,3,5-Trimethylbenzene	25	25.7	103	66-119
127-18-4	Tetrachloroethylene	25	25.2	101	72-132
108-88-3	Toluene	25	23.9	96	73-119
79-01-6	Trichloroethylene	25	24.6	98	73-121
75-69-4	Trichlorofluoromethane	25	29.8	119	46-152
75-01-4	Vinyl chloride	25	26.5	106	54-126
1330-20-7	Xylene (total)	75	72.3	96	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	93%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-BS	E0066329.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	80-119%
460-00-4	4-Bromofluorobenzene	100%	72-126%

(a) AZ:L5

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-BS	E0066192.D	1	03/19/18	FI	n/a	n/a	VE2938
VE2938-BSD [a]	E0066193.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	125	58.6	47	67.5	54	14	46-129/30
71-43-2	Benzene	25	24.8	99	23.7	95	5	68-119/30
108-86-1	Bromobenzene	25	22.4	90	21.8	87	3	71-119/30
74-97-5	Bromochloromethane	25	24.7	99	23.4	94	5	71-118/30
75-27-4	Bromodichloromethane	25	27.1	108	25.9	104	5	72-118/30
75-25-2	Bromoform	25	19.3	77	19.0	76	2	54-123/30
104-51-8	n-Butylbenzene	25	27.1	108	26.0	104	4	66-123/30
135-98-8	sec-Butylbenzene	25	26.2	105	25.5	102	3	72-123/30
98-06-6	tert-Butylbenzene	25	26.1	104	25.1	100	4	70-124/30
108-90-7	Chlorobenzene	25	23.7	95	22.6	90	5	74-120/30
75-00-3	Chloroethane	25	30.1	120	30.7	123	2	61-132/30
67-66-3	Chloroform	25	26.8	107	25.4	102	5	73-122/30
95-49-8	o-Chlorotoluene	25	24.8	99	24.0	96	3	71-122/30
106-43-4	p-Chlorotoluene	25	25.5	102	24.4	98	4	73-120/30
75-15-0	Carbon disulfide	25	28.3	113	28.4	114	0	55-140/30
56-23-5	Carbon tetrachloride	25	27.4	110	26.6	106	3	68-133/30
75-34-3	1,1-Dichloroethane	25	28.7	115	26.9	108	6	72-121/30
75-35-4	1,1-Dichloroethylene	25	31.2	125	29.3	117	6	67-140/30
563-58-6	1,1-Dichloropropene	25	30.3	121	28.6	114	6	73-130/30
96-12-8	1,2-Dibromo-3-chloropropane	25	24.5	98	23.5	94	4	47-133/30
106-93-4	1,2-Dibromoethane	25	24.5	98	23.8	95	3	69-121/30
107-06-2	1,2-Dichloroethane	25	27.7	111	26.2	105	6	68-121/30
78-87-5	1,2-Dichloropropane	25	25.8	103	24.5	98	5	72-116/30
142-28-9	1,3-Dichloropropane	25	23.8	95	23.3	93	2	70-118/30
594-20-7	2,2-Dichloropropane	25	25.6	102	24.2	97	6	57-141/30
124-48-1	Dibromochloromethane	25	25.2	101	24.6	98	2	68-119/30
75-71-8	Dichlorodifluoromethane	25	17.0	68	17.2	69	1	29-182/30
156-59-2	cis-1,2-Dichloroethylene	25	25.1	100	23.9	96	5	72-117/30
10061-01-5	cis-1,3-Dichloropropene	25	24.5	98	23.5	94	4	71-118/30
541-73-1	m-Dichlorobenzene	25	23.6	94	23.0	92	3	73-117/30
95-50-1	o-Dichlorobenzene	25	23.3	93	22.4	90	4	71-117/30
106-46-7	p-Dichlorobenzene	25	22.0	88	21.5	86	2	71-116/30
156-60-5	trans-1,2-Dichloroethylene	25	28.5	114	26.9	108	6	68-124/30
10061-02-6	trans-1,3-Dichloropropene	25	26.2	105	25.3	101	3	72-127/30
100-41-4	Ethylbenzene	25	25.4	102	24.7	99	3	71-117/30
637-92-3	Ethyl tert-Butyl Ether	25	24.8	99	23.7	95	5	66-122/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-BS	E0066192.D	1	03/19/18	FI	n/a	n/a	VE2938
VE2938-BSD [a]	E0066193.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	125	139	111	132	106	5	49-124/30
87-68-3	Hexachlorobutadiene	25	22.1	88	22.2	89	0	62-143/30
98-82-8	Isopropylbenzene	25	26.7	107	25.8	103	3	74-141/30
99-87-6	p-Isopropyltoluene	25	25.7	103	25.1	100	2	72-126/30
108-10-1	4-Methyl-2-pentanone	125	136	109	126	101	8	54-122/30
74-83-9	Methyl bromide	25	28.2	113	28.6	114	1	53-138/30
74-87-3	Methyl chloride	25	23.5	94	22.7	91	3	50-145/30
74-95-3	Methylene bromide	25	25.3	101	24.2	97	4	71-117/30
75-09-2	Methylene chloride	25	27.9	112	26.5	106	5	60-125/30
78-93-3	Methyl ethyl ketone	125	99.1	79	90.1	72	10	51-129/30
1634-04-4	Methyl Tert Butyl Ether	25	25.4	102	24.2	97	5	65-119/30
91-20-3	Naphthalene	25	21.5	86	21.3	85	1	43-139/30
103-65-1	n-Propylbenzene	25	25.7	103	24.9	100	3	72-123/30
100-42-5	Styrene	25	25.1	100	24.4	98	3	74-119/30
75-65-0	Tert Butyl Alcohol	250	162	65	147	59	10	35-146/30
630-20-6	1,1,1,2-Tetrachloroethane	25	25.7	103	24.9	100	3	74-119/30
71-55-6	1,1,1-Trichloroethane	25	28.7	115	27.5	110	4	72-129/30
79-34-5	1,1,2,2-Tetrachloroethane	25	24.8	99	24.1	96	3	62-121/30
79-00-5	1,1,2-Trichloroethane	25	24.7	99	23.6	94	5	70-119/30
87-61-6	1,2,3-Trichlorobenzene	25	20.2	81	20.3	81	0	44-144/30
96-18-4	1,2,3-Trichloropropane	25	24.2	97	22.9	92	6	61-124/30
120-82-1	1,2,4-Trichlorobenzene	25	21.4	86	20.8	83	3	57-132/30
95-63-6	1,2,4-Trimethylbenzene	25	24.7	99	24.1	96	2	70-121/30
108-67-8	1,3,5-Trimethylbenzene	25	25.8	103	25.0	100	3	66-119/30
127-18-4	Tetrachloroethylene	25	23.8	95	23.4	94	2	72-132/30
108-88-3	Toluene	25	24.2	97	23.5	94	3	73-119/30
79-01-6	Trichloroethylene	25	25.8	103	24.6	98	5	73-121/30
75-69-4	Trichlorofluoromethane	25	34.2	137	33.6	134	2	46-152/30
75-01-4	Vinyl chloride	25	25.5	102	25.6	102	0	54-126/30
1330-20-7	Xylene (total)	75	77.8	104	74.6	99	4	74-119/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	111%	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	119%	116%	68-124%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-BS	E0066192.D	1	03/19/18	FI	n/a	n/a	VE2938
VE2938-BSD [a]	E0066193.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
2037-26-5	Toluene-D8	103%	103%	80-119%
460-00-4	4-Bromofluorobenzene	103%	102%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18251-2MS	K359219.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2MSD	K359220.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2 [a]	K359218.D	10	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	TD18251-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		1250	1350	108	1250	1300	104	4	46-129/25
71-43-2	Benzene	ND		250	220	88	250	202	81	9	68-119/12
108-86-1	Bromobenzene	ND		250	206	82	250	195	78	5	71-119/12
74-97-5	Bromochloromethane	ND		250	233	93	250	220	88	6	71-118/13
75-27-4	Bromodichloromethane	ND		250	235	94	250	220	88	7	72-118/16
75-25-2	Bromoform	ND		250	185	74	250	178	71	4	54-123/17
104-51-8	n-Butylbenzene	ND		250	216	86	250	206	82	5	66-123/14
135-98-8	sec-Butylbenzene	ND		250	209	84	250	196	78	6	72-123/13
98-06-6	tert-Butylbenzene	ND		250	209	84	250	196	78	6	70-124/15
108-90-7	Chlorobenzene	ND		250	214	86	250	199	80	7	74-120/12
75-00-3	Chloroethane	ND		250	271	108	250	247	99	9	61-132/16
67-66-3	Chloroform	ND		250	224	90	250	205	82	9	73-122/13
95-49-8	o-Chlorotoluene	ND		250	205	82	250	193	77	6	71-122/12
106-43-4	p-Chlorotoluene	ND		250	211	84	250	198	79	6	73-120/12
75-15-0	Carbon disulfide	ND		250	228	91	250	215	86	6	55-140/24
56-23-5	Carbon tetrachloride	ND		250	228	91	250	207	83	10	68-133/20
75-34-3	1,1-Dichloroethane	ND		250	228	91	250	207	83	10	72-121/14
75-35-4	1,1-Dichloroethylene	84.2		250	307	89	250	279	78	10	67-140/18
563-58-6	1,1-Dichloropropene	ND		250	235	94	250	214	86	9	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		250	228	91	250	232	93	2	47-133/23
106-93-4	1,2-Dibromoethane	ND		250	230	92	250	216	86	6	69-121/13
107-06-2	1,2-Dichloroethane	ND		250	243	97	250	226	90	7	68-121/12
78-87-5	1,2-Dichloropropane	ND		250	222	89	250	206	82	7	72-116/12
142-28-9	1,3-Dichloropropane	ND		250	215	86	250	203	81	6	70-118/12
594-20-7	2,2-Dichloropropane	ND		250	253	101	250	219	88	14	57-141/16
124-48-1	Dibromochloromethane	ND		250	230	92	250	223	89	3	68-119/15
75-71-8	Dichlorodifluoromethane	ND		250	299	120	250	261	104	14	29-182/23
156-59-2	cis-1,2-Dichloroethylene	7.1	J	250	219	85	250	203	78	8	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		250	215	86	250	203	81	6	71-118/18
541-73-1	m-Dichlorobenzene	ND		250	213	85	250	198	79	7	73-117/12
95-50-1	o-Dichlorobenzene	ND		250	208	83	250	195	78	6	71-117/11
106-46-7	p-Dichlorobenzene	ND		250	201	80	250	190	76	6	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		250	221	88	250	205	82	8	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		250	224	90	250	214	86	5	72-127/17
100-41-4	Ethylbenzene	ND		250	215	86	250	198	79	8	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		250	212	85	250	201	80	5	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18251-2MS	K359219.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2MSD	K359220.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2 [a]	K359218.D	10	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	TD18251-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		1250	1120	90	1250	1100	88	2	49-124/21
87-68-3	Hexachlorobutadiene	ND		250	209	84	250	211	84	1	62-143/18
98-82-8	Isopropylbenzene	ND		250	215	86	250	200	80	7	74-141/13
99-87-6	p-Isopropyltoluene	ND		250	213	85	250	201	80	6	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		1250	1140	91	1250	1100	88	4	54-122/20
74-83-9	Methyl bromide	ND		250	305	122	250	283	113	7	53-138/16
74-87-3	Methyl chloride	ND		250	261	104	250	231	92	12	50-145/17
74-95-3	Methylene bromide	ND		250	237	95	250	222	89	7	71-117/12
75-09-2	Methylene chloride	ND		250	220	88	250	209	84	5	60-125/16
78-93-3	Methyl ethyl ketone	ND		1250	1230	98	1250	1170	94	5	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		250	228	91	250	215	86	6	65-119/13
91-20-3	Naphthalene	ND		250	199	80	250	202	81	1	43-139/28
103-65-1	n-Propylbenzene	ND		250	205	82	250	191	76	7	72-123/13
100-42-5	Styrene	ND		250	220	88	250	206	82	7	74-119/19
75-65-0	Tert Butyl Alcohol	ND		2500	2150	86	2500	2220	89	3	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		250	226	90	250	213	85	6	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		250	237	95	250	217	87	9	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	225	90	250	220	88	2	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		250	225	90	250	214	86	5	70-119/13
87-61-6	1,2,3-Trichlorobenzene	ND		250	201	80	250	201	80	0	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		250	221	88	250	210	84	5	61-124/16
120-82-1	1,2,4-Trichlorobenzene	ND		250	203	81	250	201	80	1	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		250	205	82	250	192	77	7	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		250	213	85	250	199	80	7	66-119/15
127-18-4	Tetrachloroethylene	ND		250	212	85	250	195	78	8	72-132/14
108-88-3	Toluene	ND		250	209	84	250	194	78	7	73-119/13
79-01-6	Trichloroethylene	583		250	751	67* [b]	250	698	46* [b]	7	73-121/13
75-69-4	Trichlorofluoromethane	ND		250	310	124	250	278	111	11	46-152/25
75-01-4	Vinyl chloride	ND		250	249	100	250	224	90	11	54-126/17
1330-20-7	Xylene (total)	ND		750	643	86	750	592	79	8	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD18251-2	Limits
1868-53-7	Dibromofluoromethane	98%	98%	96%	72-122%
17060-07-0	1,2-Dichloroethane-D4	106%	105%	106%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18251-2MS	K359219.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2MSD	K359220.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2 [a]	K359218.D	10	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Surrogate Recoveries	MS	MSD	TD18251-2	Limits
2037-26-5	Toluene-D8	99%	99%	98%	80-119%
460-00-4	4-Bromofluorobenzene	98%	99%	98%	72-126%

(a) Sample used for QC purposes only.
(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18111-1MS	K359273.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1MSD	K359274.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1	K359275.D	1	03/23/18	FI	n/a	n/a	VK2211
TD18111-1 [a]	K359269.D	50	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	TD18111-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	32.3	J	6250	6570	105	6250	6260	100	5	46-129/25
71-43-2	Benzene	52.8		1250	1100	84	1250	1160	89	5	68-119/12
108-86-1	Bromobenzene	ND		1250	993	79	1250	1040	83	5	71-119/12
74-97-5	Bromochloromethane	ND		1250	1130	90	1250	1180	94	4	71-118/13
75-27-4	Bromodichloromethane	ND		1250	1140	91	1250	1220	98	7	72-118/16
75-25-2	Bromoform	ND		1250	914	73	1250	944	76	3	54-123/17
104-51-8	n-Butylbenzene	0.53	J	1250	1070	86	1250	1140	91	6	66-123/14
135-98-8	sec-Butylbenzene	0.36	J	1250	1010	81	1250	1080	86	7	72-123/13
98-06-6	tert-Butylbenzene	ND		1250	1020	82	1250	1080	86	6	70-124/15
108-90-7	Chlorobenzene	ND		1250	1030	82	1250	1090	87	6	74-120/12
75-00-3	Chloroethane	ND		1250	1160	93	1250	1230	98	6	61-132/16
67-66-3	Chloroform	ND		1250	1060	85	1250	1120	90	6	73-122/13
95-49-8	o-Chlorotoluene	ND		1250	990	79	1250	1040	83	5	71-122/12
106-43-4	p-Chlorotoluene	ND		1250	1020	82	1250	1070	86	5	73-120/12
75-15-0	Carbon disulfide	ND		1250	1030	82	1250	1160	93	12	55-140/24
56-23-5	Carbon tetrachloride	ND		1250	1130	90	1250	1220	98	8	68-133/20
75-34-3	1,1-Dichloroethane	ND		1250	1070	86	1250	1110	89	4	72-121/14
75-35-4	1,1-Dichloroethylene	ND		1250	1090	87	1250	1160	93	6	67-140/18
563-58-6	1,1-Dichloropropene	ND		1250	1130	90	1250	1220	98	8	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		1250	1150	92	1250	1160	93	1	47-133/23
106-93-4	1,2-Dibromoethane	ND		1250	1120	90	1250	1140	91	2	69-121/13
107-06-2	1,2-Dichloroethane	ND		1250	1210	97	1250	1250	100	3	68-121/12
78-87-5	1,2-Dichloropropane	ND		1250	1060	85	1250	1110	89	5	72-116/12
142-28-9	1,3-Dichloropropane	ND		1250	1040	83	1250	1090	87	5	70-118/12
594-20-7	2,2-Dichloropropane	ND		1250	1170	94	1250	1240	99	6	57-141/16
124-48-1	Dibromochloromethane	ND		1250	1140	91	1250	1190	95	4	68-119/15
75-71-8	Dichlorodifluoromethane	ND		1250	1290	103	1250	1360	109	5	29-182/23
156-59-2	cis-1,2-Dichloroethylene	ND		1250	1030	82	1250	1090	87	6	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		1250	1060	85	1250	1120	90	6	71-118/18
541-73-1	m-Dichlorobenzene	ND		1250	1030	82	1250	1090	87	6	73-117/12
95-50-1	o-Dichlorobenzene	ND		1250	1020	82	1250	1060	85	4	71-117/11
106-46-7	p-Dichlorobenzene	ND		1250	971	78	1250	1030	82	6	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		1250	1070	86	1250	1040	83	3	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		1250	1100	88	1250	1150	92	4	72-127/17
100-41-4	Ethylbenzene	ND		1250	1040	83	1250	1100	88	6	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		1250	991	79	1250	1030	82	4	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18111-1MS	K359273.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1MSD	K359274.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1	K359275.D	1	03/23/18	FI	n/a	n/a	VK2211
TD18111-1 [a]	K359269.D	50	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	TD18111-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		6250	5510	88	6250	5560	89	1	49-124/21
87-68-3	Hexachlorobutadiene	1.2		1250	1060	85	1250	1160	93	9	62-143/18
98-82-8	Isopropylbenzene	ND		1250	1020	82	1250	1100	88	8	74-141/13
99-87-6	p-Isopropyltoluene	0.34	J	1250	1040	83	1250	1100	88	6	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		6250	5610	90	6250	5620	90	0	54-122/20
74-83-9	Methyl bromide	ND		1250	1340	107	1250	1440	115	7	53-138/16
74-87-3	Methyl chloride	0.79	J	1250	1100	88	1250	1110	89	1	50-145/17
74-95-3	Methylene bromide	ND		1250	1160	93	1250	1200	96	3	71-117/12
75-09-2	Methylene chloride	ND		1250	922	74	1250	981	78	6	60-125/16
78-93-3	Methyl ethyl ketone	ND		6250	5990	96	6250	5860	94	2	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		1250	1090	87	1250	1050	84	4	65-119/13
91-20-3	Naphthalene	0.54	J	1250	991	79	1250	1050	84	6	43-139/28
103-65-1	n-Propylbenzene	ND		1250	984	79	1250	1040	83	6	72-123/13
100-42-5	Styrene	ND		1250	1050	84	1250	1130	90	7	74-119/19
75-65-0	Tert Butyl Alcohol	ND		12500	10900	87	12500	10100	81	8	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		1250	1080	86	1250	1160	93	7	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		1250	1130	90	1250	1210	97	7	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		1250	1100	88	1250	1110	89	1	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		1250	1090	87	1250	1120	90	3	70-119/13
87-61-6	1,2,3-Trichlorobenzene	0.76	J	1250	1000	80	1250	1080	86	8	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		1250	1070	86	1250	1090	87	2	61-124/16
120-82-1	1,2,4-Trichlorobenzene	0.50	J	1250	1000	80	1250	1080	86	8	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		1250	999	80	1250	1050	84	5	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		1250	1030	82	1250	1100	88	7	66-119/15
127-18-4	Tetrachloroethylene	ND		1250	1040	83	1250	1110	89	7	72-132/14
108-88-3	Toluene	ND		1250	1020	82	1250	1080	86	6	73-119/13
79-01-6	Trichloroethylene	ND		1250	1070	86	1250	1120	90	5	73-121/13
75-69-4	Trichlorofluoromethane	ND		1250	1390	111	1250	1430	114	3	46-152/25
75-01-4	Vinyl chloride	ND		1250	1060	85	1250	1140	91	7	54-126/17
1330-20-7	Xylene (total)	ND		3750	3110	83	3750	3280	87	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD18111-1	TD18111-1	Limits
1868-53-7	Dibromofluoromethane	95%	97%	95%	93%	72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	107%	107%	106%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18111-1MS	K359273.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1MSD	K359274.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1	K359275.D	1	03/23/18	FI	n/a	n/a	VK2211
TD18111-1 [a]	K359269.D	50	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Surrogate Recoveries	MS	MSD	TD18111-1	TD18111-1	Limits
2037-26-5	Toluene-D8	99%	99%	99%	99%	80-119%
460-00-4	4-Bromofluorobenzene	97%	97%	97%	99%	72-126%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18194-1MS	E0066341.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1MSD	E0066342.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1	E0066338.D	5	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	TD18194-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		625	833	133*	625	835	134*	0	46-129/25
71-43-2	Benzene	ND		125	120	96	125	122	98	2	68-119/12
108-86-1	Bromobenzene	ND		125	119	95	125	122	98	2	71-119/12
74-97-5	Bromochloromethane	ND		125	124	99	125	122	98	2	71-118/13
75-27-4	Bromodichloromethane	ND		125	128	102	125	131	105	2	72-118/16
75-25-2	Bromoform	382		125	524	114	125	537	124* [a]	2	54-123/17
104-51-8	n-Butylbenzene	ND		125	137	110	125	137	110	0	66-123/14
135-98-8	sec-Butylbenzene	ND		125	139	111	125	140	112	1	72-123/13
98-06-6	tert-Butylbenzene	ND		125	132	106	125	133	106	1	70-124/15
108-90-7	Chlorobenzene	ND		125	120	96	125	120	96	0	74-120/12
75-00-3	Chloroethane	ND		125	127	102	125	132	106	4	61-132/16
67-66-3	Chloroform	ND		125	126	101	125	123	98	2	73-122/13
95-49-8	o-Chlorotoluene	ND		125	122	98	125	123	98	1	71-122/12
106-43-4	p-Chlorotoluene	ND		125	124	99	125	126	101	2	73-120/12
75-15-0	Carbon disulfide	ND		125	137	110	125	141	113	3	55-140/24
56-23-5	Carbon tetrachloride	ND		125	138	110	125	138	110	0	68-133/20
75-34-3	1,1-Dichloroethane	ND		125	132	106	125	130	104	2	72-121/14
75-35-4	1,1-Dichloroethylene	ND		125	136	109	125	136	109	0	67-140/18
563-58-6	1,1-Dichloropropene	ND		125	133	106	125	130	104	2	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		125	138	110	125	144	115	4	47-133/23
106-93-4	1,2-Dibromoethane	ND		125	121	97	125	121	97	0	69-121/13
107-06-2	1,2-Dichloroethane	ND		125	116	93	125	115	92	1	68-121/12
78-87-5	1,2-Dichloropropane	ND		125	122	98	125	123	98	1	72-116/12
142-28-9	1,3-Dichloropropane	ND		125	115	92	125	115	92	0	70-118/12
594-20-7	2,2-Dichloropropane	ND		125	133	106	125	132	106	1	57-141/16
124-48-1	Dibromochloromethane	14.0		125	148	107	125	150	109	1	68-119/15
75-71-8	Dichlorodifluoromethane	ND		125	135	108	125	137	110	1	29-182/23
156-59-2	cis-1,2-Dichloroethylene	ND		125	125	100	125	123	98	2	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		125	117	94	125	119	95	2	71-118/18
541-73-1	m-Dichlorobenzene	ND		125	122	98	125	126	101	3	73-117/12
95-50-1	o-Dichlorobenzene	ND		125	119	95	125	121	97	2	71-117/11
106-46-7	p-Dichlorobenzene	ND		125	117	94	125	119	95	2	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		125	130	104	125	128	102	2	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		125	126	101	125	126	101	0	72-127/17
100-41-4	Ethylbenzene	14.8		125	143	103	125	143	103	0	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		125	118	94	125	119	95	1	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18194-1MS	E0066341.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1MSD	E0066342.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1	E0066338.D	5	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	TD18194-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		625	726	116	625	731	117	1	49-124/21
87-68-3	Hexachlorobutadiene	ND		125	136	109	125	141	113	4	62-143/18
98-82-8	Isopropylbenzene	ND		125	137	110	125	139	111	1	74-141/13
99-87-6	p-Isopropyltoluene	ND		125	140	112	125	140	112	0	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		625	723	116	625	725	116	0	54-122/20
74-83-9	Methyl bromide	ND		125	134	107	125	138	110	3	53-138/16
74-87-3	Methyl chloride	ND		125	131	105	125	137	110	4	50-145/17
74-95-3	Methylene bromide	ND		125	120	96	125	120	96	0	71-117/12
75-09-2	Methylene chloride	ND		125	130	104	125	130	104	0	60-125/16
78-93-3	Methyl ethyl ketone	ND		625	944	151*	625	977	156*	3	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		125	120	96	125	120	96	0	65-119/13
91-20-3	Naphthalene	ND		125	130	104	125	141	113	8	43-139/28
103-65-1	n-Propylbenzene	ND		125	130	104	125	132	106	2	72-123/13
100-42-5	Styrene	ND		125	129	103	125	129	103	0	74-119/19
75-65-0	Tert Butyl Alcohol	ND		1250	1420	114	1250	1460	117	3	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		125	133	106	125	133	106	0	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		125	138	110	125	137	110	1	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		125	125	100	125	129	103	3	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		125	120	96	125	121	97	1	70-119/13
87-61-6	1,2,3-Trichlorobenzene	ND		125	122	98	125	131	105	7	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		125	115	92	125	119	95	3	61-124/16
120-82-1	1,2,4-Trichlorobenzene	ND		125	123	98	125	128	102	4	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		125	125	100	125	126	101	1	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		125	132	106	125	134	107	2	66-119/15
127-18-4	Tetrachloroethylene	ND		125	130	104	125	130	104	0	72-132/14
108-88-3	Toluene	ND		125	124	99	125	123	98	1	73-119/13
79-01-6	Trichloroethylene	ND		125	126	101	125	126	101	0	73-121/13
75-69-4	Trichlorofluoromethane	ND		125	163	130	125	164	131	1	46-152/25
75-01-4	Vinyl chloride	ND		125	130	104	125	137	110	5	54-126/17
1330-20-7	Xylene (total)	4.6	J	375	386	102	375	385	101	0	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD18194-1	Limits
1868-53-7	Dibromofluoromethane	102%	101%	102%	72-122%
17060-07-0	1,2-Dichloroethane-D4	99%	99%	102%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18194-1MS	E0066341.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1MSD	E0066342.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1	E0066338.D	5	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Surrogate Recoveries	MS	MSD	TD18194-1	Limits
2037-26-5	Toluene-D8	101%	101%	102%	80-119%
460-00-4	4-Bromofluorobenzene	99%	99%	103%	72-126%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS839-MB	SS019062.D	1	03/26/18	SC	n/a	n/a	GSS839

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS839-BS	SS019060.D	1	03/26/18	SC	n/a	n/a	GSS839
GSS839-BSD [a]	SS019061.D	1	03/26/18	SC	n/a	n/a	GSS839

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
74-82-8	Methane	21.5	25.7	120	24.3	113	6	68-139/30
74-85-1	Ethene	57.4	51.6	90	45.5	79	13	52-145/30
74-84-0	Ethane	43.3	45.3	105	39.9	92	13	68-131/30

(a) Insufficient sample available for MS/MSD. AZ:Q9

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD18251
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate	GN88570	5.0	1.0	mg/l				
Alkalinity, Carbonate	GN88571	5.0	0.0	mg/l				
Alkalinity, Total as CaCO3	GN88569	5.0	0.0	mg/l	100	94.0	94.0	90-100%
Bromide	GP46777/GN88555	0.50	0.0	mg/l	10	10.0	100.0	90-110%
Chloride	GP46777/GN88555	0.50	0.0	mg/l	10	9.97	99.7	90-110%
Fluoride	GP46777/GN88555	0.50	0.0	mg/l	10	10.9	109.0	90-110%
Iron, Ferrous	GN88487	0.10	0.0	mg/l	4	4.0	99.0	94-103%
Nitrogen, Nitrate	GP46777/GN88555	0.50	0.0	mg/l	10	9.69	96.9	90-110%
Nitrogen, Nitrite	GP46777/GN88555	0.50	0.0	mg/l	10	10.1	101.0	90-110%
Sulfate	GP46777/GN88555	0.50	0.0	mg/l	10	10.4	104.0	90-110%

Associated Samples:
Batch GN88487: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88569: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88570: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88571: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GP46777: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD18251
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Bicarbonate	GN88570	TD18251-1	mg/l	285	284	0.0	0-10%
Alkalinity, Carbonate	GN88571	TD18251-1	mg/l	0.0	0.0	0.0	0-20%
Alkalinity, Total as CaCO3	GN88569	TD18251-1	mg/l	285	285	0.0	0-10%
Chloride	GP46777/GN88555	TD18060-1	mg/l	529	508	4.1	0-20%
Iron, Ferrous	GN88487	TD18251-1	mg/l	0.0	0.0	0.0	0-10%
Sulfate	GP46777/GN88555	TD18060-1	mg/l	957	985	2.9	0-20%

Associated Samples:
Batch GN88487: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88569: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88570: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88571: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GP46777: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD18251
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN88569	TD18251-1	mg/l	285	25	310	100.0	75-117%
Chloride	GP46777/GN88555	TD18060-1	mg/l	529	500	1030	100.2	80-120%
Iron, Ferrous	GN88487	TD18251-1	mg/l	0.0	4	3.9	96.0	89-106%
Sulfate	GP46777/GN88555	TD18060-1	mg/l	957	1000	2100	114.3	80-120%

Associated Samples:
Batch GN88487: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88569: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GP46777: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(SGS Orlando, FL)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #:
Bottle Order Control #:
SGS Quote #:
SGS Job #: TD18251

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-031518		3/15/18	8:30:00 AM		AQ	3	3								X	
2	PT-2S-90-031518		3/15/18	11:20:00 AM		AQ	3	3								X	
3	LB-7R-90-031518		3/15/18	12:30:00 PM		AQ	3	3								X	
4	ISCO-1-D-98-031518		3/15/18	2:10:00 PM		AQ	3	3								X	
5	ISCO-1-S-85-031518		3/15/18	3:25:00 PM		AQ	3	3								X	

Number of preserved Bottles

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 3/23/2018

Approved By (SGS PM): / Date:

Emergency & Rush T/Adata available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date/Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3/16/18	1	2	03-17-18	2 J. Compel 10:45
Relinquished by Sampler: 3	Date/Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp. 3.4

9.1

9

TD18251: Chain of Custody
Page 1 of 3
SGS Orlando, FL

SGS Sample Receipt Summary

Job Number: TD18251 **Client:** SGSTX **Project:** PLYMOUTH

Date / Time Received: 3/17/2018 10:45:00 AM **Delivery Method:** FX **Airbill #'s:** 7314 4447 2395

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 2: (2.4);

Cooler Temps (Corrected) °C: Cooler 2: (2.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: JORGEC Date: 3/17/2018 10:45:00 A Reviewer: tl Date: 3/20/2018

9.1

9

TD18251: Chain of Custody
Page 2 of 3

CHAIN OF CUSTODY

SGS

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # TD18251

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-031518		3/15/18	8:30:00 AM		AQ	3									X	
2	PT-2S-90-031518		3/15/18	11:20:00 AM		AQ	1									X	
3	LB-7R-90-031518		3/15/18	12:30:00 PM		AQ	1									X	
4	ISCO-1-D-98-031518		3/15/18	2:10:00 PM		AQ	1									X	
5	ISCO-1-S-85-031518		3/15/18	3:25:00 PM		AQ	1									X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [x] other Due 3/23/2018

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3/19/18 1630	1	2		2 3/20/18 915
3		3	4		4
5		5			

Custody Seal # [ ] Intact [ ] Not intact Preserved where applicable [ ] On Ice [ ] Cooler Temp 2.8

TD18251: Chain of Custody
Page 3 of 3

MS Volatiles

QC Data Summaries

(SGS Orlando, FL)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1926-MB	Z51160.D	1	03/23/18	MM	n/a	n/a	VZ1926

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	103%	74-125%
2037-26-5	Toluene-D8	102%	88-111%

Method Blank Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1927-MB	Z51191.D	1	03/26/18	MM	n/a	n/a	VZ1927

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-1, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	96%	74-125%
2037-26-5	Toluene-D8	107%	88-111%

Blank Spike Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1926-BS	Z51158.D	1	03/23/18	MM	n/a	n/a	VZ1926

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	20.1	101	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	101%	74-125%
2037-26-5	Toluene-D8	103%	88-111%

10.2.1

10

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1927-BS	Z51190.D	1	03/26/18	MM	n/a	n/a	VZ1927

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-1, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	15.0	75	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	98%	74-125%
2037-26-5	Toluene-D8	104%	88-111%

10.2.2

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18246-1MS	Z51180.D	1	03/23/18	MM	n/a	n/a	VZ1926
TD18246-1MSD	Z51181.D	1	03/23/18	MM	n/a	n/a	VZ1926
TD18246-1	Z51174.D	1	03/23/18	MM	n/a	n/a	VZ1926

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-2

CAS No.	Compound	TD18246-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	15.1		20	32.6	88	20	22.9	39*	35* [a]	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	TD18246-1	Limits
17060-07-0	1,2-Dichloroethane-D4	95%	98%	97%	74-125%
2037-26-5	Toluene-D8	107%	106%	106%	88-111%

(a) AZ:R9

10.3.1

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA52696-3MS	Z51209.D	1	03/26/18	MM	n/a	n/a	VZ1927
FA52696-3MSD	Z51210.D	1	03/26/18	MM	n/a	n/a	VZ1927
FA52696-3	Z51194.D	1	03/26/18	MM	n/a	n/a	VZ1927

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-1, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	FA52696-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	13.4	67	20	11.3	57*	17	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA52696-3	Limits
17060-07-0	1,2-Dichloroethane-D4	100%	101%	99%	74-125%
2037-26-5	Toluene-D8	105%	106%	104%	88-111%

10.3.2

10

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Scott, LA)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # TD18251

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: Trameshia.Brown@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE_NA	LAB USE ONLY
1	PT-3-90-031518		3/15/18	8:30:00 AM		AQ	1			x						X	/
2	PT-2S-90-031518		3/15/18	11:20:00 AM		AQ	1			x						X	/
3	LB-7R-90-031518		3/15/18	12:30:00 PM		AQ	1			x						X	/
4	ISCO-1-D-98-031518		3/15/18	2:10:00 PM		AQ	1			x						X	/
5	ISCO-1-S-85-031518		3/15/18	3:25:00 PM		AQ	1			x						X	/

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 3/23/2018

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions: 3W2 LA

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3/16/18	1 SGS	2 SGS		2
3	3/16/18 3:30	3 Mark Red 3-17-18 07:40	4		4
5		5			

Custody Seal # CS/OC [ ] Intact [ ] Not intact Preserved where applicable [ ] On Ice [ ] Cooler Temp. 1.6 DV441

11.1 11

TD18251: Chain of Custody
Page 1 of 2
SGS Scott, LA

SGS Sample Receipt Summary

Job Number: TD18251 **Client:** SGS NORTH AMERICA **Project:** PLYMOUTH TUBE GW

Date / Time Received: 3/17/2018 7:40:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.6/1.6); DV441

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV441;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Comments

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

TD18251: Chain of Custody
Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Scott, LA)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/19/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	10	45		
Antimony	6.0	1.5	3.4		
Arsenic	10	1.5	1.9		
Barium	10	.25	1		
Beryllium	4.0	.04	.2		
Boron	100	1.4	8.3		
Cadmium	5.0	.13	1.3		
Calcium	100	5.9	9.2		
Chromium	10	.35	.2		
Cobalt	10	.15	1.4		
Copper	10	.98	4		
Iron	100	4.3	22	-5.8	<100
Lead	10	.79	2.7		
Lithium	10	2	5.2		
Magnesium	100	19	72		
Manganese	10	3.6	.3		
Molybdenum	10	.19	1.1		
Nickel	10	.67	1.8		
Potassium	500	37	140		
Selenium	10	1.7	5.3		
Silver	10	.42	2		
Sodium	500	89	78	-86	<500
Strontium	10	.08	.2		
Thallium	5.0	1.4	4.8		
Tin	10	.51	2.2		
Titanium	10	.34	1.2		
Vanadium	10	.28	.8		
Zinc	20	9.9	.7		

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/19/18

Metal	LA42290-1 Original	MS	Spikelot ICPSPIKE1%	Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	anr				
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper					
Iron	1660	2750	1000	104.0	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium	anr				
Silver	anr				
Sodium	283000	293000	10000	100.0	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/19/18

Metal	LA42290-1 Original	MSD	Spikelot ICPSPIKE1%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	anr					
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper						
Iron	1660	2730	1000	102.0	0.7	20
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium	anr					
Silver	anr					
Sodium	283000	284000	10000	10.0 (a)	3.1	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/19/18

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron	1060	1000	106.0	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium	anr			
Silver	anr			
Sodium	10200	10000	102.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/19/18

Metal	LA42290-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron	1660	1680	1.7	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium	anr			
Silver	anr			
Sodium	283000	287000	1.3	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

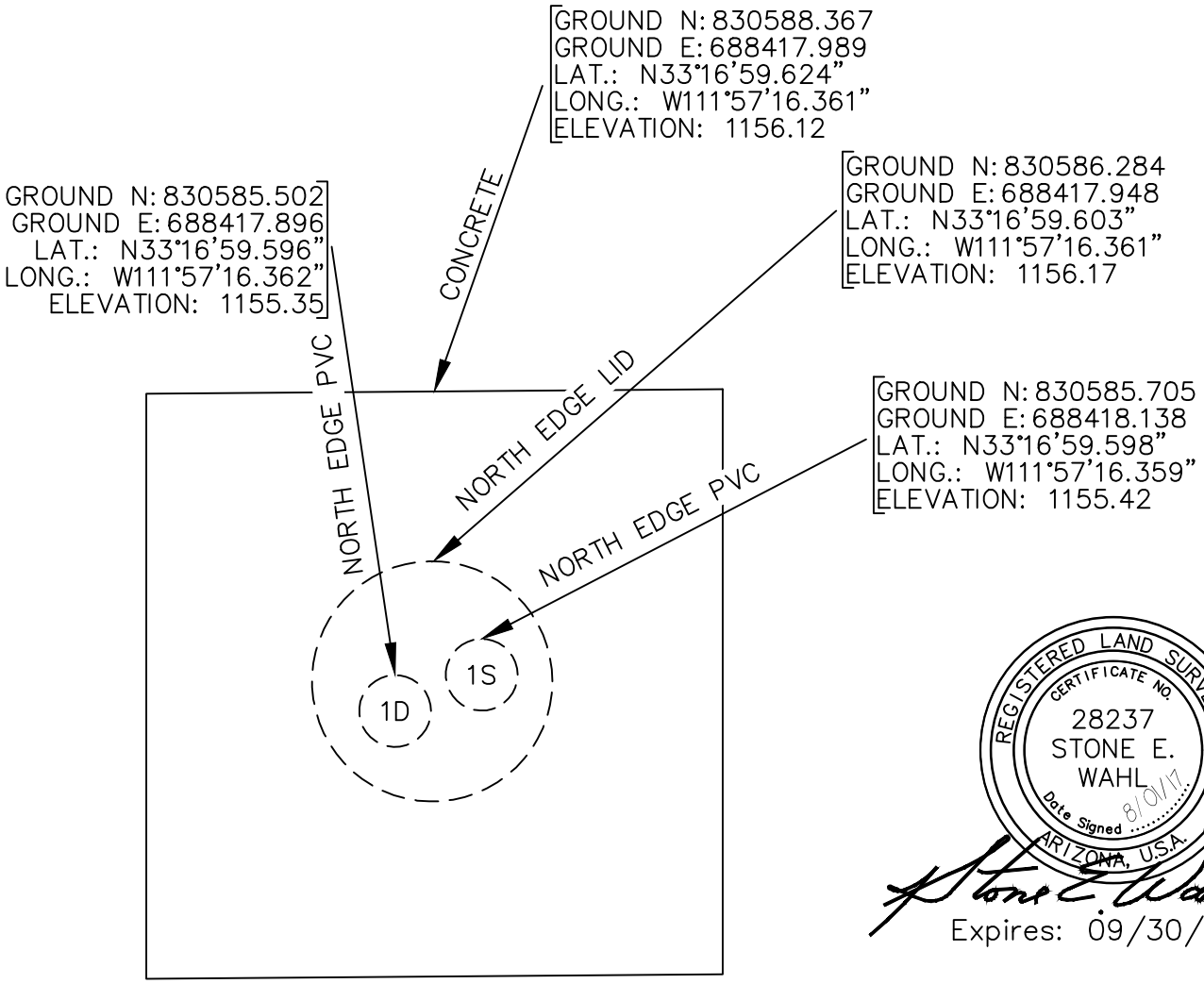
Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

APPENDIX E

Well Survey Data

MW-ISCO-1 CERTIFICATION



REGISTERED LAND SURVEYOR
CERTIFICATE NO.
28237
STONE E.
WAHL
Date Signed 8/01/17
ARIZONA, U.S.A.

Expires: 09/30/2018

GROUND GRID CONTROL DATA AND BASIS OF BEARING

PER GILA RIVER INDIAN COMMUNITY RESOLUTION GR-18-97:

THESE COORDINATES HAVE BEEN CORRECTED FOR STATE PLANE COORDINATES (SPC) MAPPING SCALE AND ELEVATION FACTORS TO REFLECT THE ACTUAL HORIZONTAL GROUND DISTANCE BETWEEN POINTS IN U.S. FEET.

THE BASIS OF BEARING IS SPC GRID NORTH.

ELEVATIONS ARE ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29).

GROUND GRID COORDINATE SYSTEM WAS DERIVED FROM NAD 83 SPC SYSTEM IN U.S. FEET MULTIPLIED BY A GROUND FACTOR OF 1.0001574 USING INDIAN AS THE BASE ORIGIN-POINT.

ALL COORDINATES SHOWN HEREON ARE GROUND VALUES.

UTILIZED BASE STATION D-4: GROUND NORTHING:822913.966, GROUND EASTING: 671380.488, ELEVATION: 1150.001

A TEAM PROFESSIONAL ASSOCIATES, INC.

2432 W. Peoria Ave., Ste 1323
Phoenix, Arizona 85029
Phone:(602) 906-0020
Fax:(602) 906-0019

MW-ISCO-1 CERTIFICATION	
Job #:	2349
Date:	8/01/17
Sheet:	1 of 1

APPENDIX F

Data Quality Review

Haley & Aldrich, Inc.
600 South Meyer Ave
Suite 100
Tucson, AZ 85701
520.289.8621

Data Usability Summary Report

Project Name: Plymouth Tube Groundwater Monitoring

Analytical Laboratory: SGS Laboratory – Houston, TX

Haley & Aldrich, Inc. prepared this Data Usability Report (DUSR) to summarize the review and validation of the Plymouth Tube ISCO groundwater samples collected on 11 July 2017 through 15 March 2018.
Analytical results for each Sample Delivery Groups (SDG) below were reviewed with guidance provided by the United States Environmental Protection Agency (EPA) to determine the data's usability. This data validation and usability assessment was performed per the guidance and requirements established by the EPA National Functional Guidelines for Organic Data Review. The following quality assurance/quality control (QA/QC) criteria from the analysis of the project samples were reviewed as applicable:

1. Sample Delivery Group #: TD6115
2. Sample Delivery Group #: TD10880
3. Sample Delivery Group #: TD12350
4. Sample Delivery Group #: TD14014
5. Sample Delivery Group #: TD18251

- Holding Times/Preservation
- Reporting Limits and Sample Dilution
- Reporting Basis (Wet/Dry)
- Blank Sample Analysis
- Surrogate Recovery Compliance
- Blank Spike Samples
- Matrix Spike Samples
- Field and Laboratory Duplicate Samples
- Use of Laboratory Data Qualifiers

Analytical precision and accuracy were evaluated based on the blank spike, matrix spike, or lab duplicate analyses performed concurrently with the project samples or based on field duplicates collected at the site.

Data reported in this sampling event were reported to the laboratory reporting limit (RL).

Sample data were qualified by the laboratory in accordance with standard operating procedures (SOPs). Based on a check of the data qualifiers assigned as project sample results, these flags were applied to the reported results in accordance with the laboratory-specific SOPs. The results presented in each laboratory report were found to be compliant with the data quality objectives (DQOs) for the project and usable; any exceptions are noted in the following pages.

1. Sample Delivery Group Number TD6115

1.1 SUMMARY

This DUSR summarizes the review of SDG number TD6115. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
ISCO-1-D-98-071117	N	TD6115-1	7/11/2017	WG	8260C, 8260B SIM
ISCO-1-S-85-071117	N	TD6115-2	7/11/2017	WG	8260C, 8260B SIM
TB-071117	TB	TD6115-3	7/11/2017	WQ	8260C

Holding Times

Method	*Analyte(s)*	*Prep Holding Time*	*Analysis Holding Time*
8260C	*VOCs*	*NA*	*14 days*
8260B SIM	*1,4-Dioxane*	*7 days*	*40 days*

1.2 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per EPA protocol. Cooler temperature on arrival to the laboratory was 1.9 Degrees C.

1.3 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below. In cases when multiple dilutions are reported per sample, the reviewer chose the lowest dilution with results still within the calibration range and rejected the alternative result.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
ISCO-1-D-98-071117	TD6115-1	Trichloroethene	5x	Dilution required due to high concentration of target analyte
ISCO-1-S-85-071117	TD6115-2	1,1-Dichloroethene	10x	
		Trichloroethene	10x	

1.4 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples did not have detections, indicating that contamination from laboratory activities did not occur.

Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport. Blank samples for field QC did not have detections, indicating that contamination from field activities did not occur.

1.5 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The percent recoveries were within the limits specified by the EPA.

1.6 BLANK SPIKE SAMPLES

The blank spike sample (BSP) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the BSP were within the control limits specified by the SOPs.

1.7 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effect of the sample matrix on the sample preparation procedures and measurement methodologies. The below sample(s) were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
TD6115-1	ISCO-1-D-98-071117	8260C

The MS/MSD recoveries and the RPD between the MS and MSD results were within the acceptance limits specified by the EPA, with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualification	Affected Samples
MS/MSD	8260C	TD6156-6	Various	--	None, Not HA Sample	None

1.8 USE OF LABORATORY DATA QUALIFIERS

The results presented in this report were found to be compliant with the data quality objects for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

2. Sample Delivery Group Number TD10880

2.1 SUMMARY

This DUSR summarizes the review of SDG number TD10880. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
PT-3-90-10172017	N	TD10880-1	10/17/2017	WG	8260C, 8260B SIM
PT-3-90-10172017 DUP	FD	TD10880-2	10/17/2017	WG	8260C
PT-2S-90-10172017	N	TD10880-3	10/17/2017	WG	8260C, 8260B SIM
ERB-101717	EB	TD10880-4	10/17/2017	WQ	8260C
TB-10172017	TB	TD10880-5	10/17/2017	WQ	8260C

Holding Times

Method	*Analyte(s)*	*Prep Holding Time*	*Analysis Holding Time*
8260C	*VOCs*	*NA*	*14 days*
8260B SIM	*1,4-Dioxane*	*7 days*	*40 days*

2.2 CASE NARRATIVE

The SGS lab report case narrative lists various quality control exceedances not covered in a standard Level II review, including continuing calibration verification exceedances. As a full Level IV validation was not requested, these quality control exceedances were not reviewed and thus no qualifiers were applied.

2.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per EPA protocol. Cooler temperature on arrival to the laboratory was 1.4 Degrees C.

2.4 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below. In cases when multiple dilutions are reported per sample, the reviewer chose the lowest dilution with results still within the calibration range and rejected the alternative result.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
PT-2S-90-10172017	TD10880-3	Trichloroethene	10x	Dilution required due to high concentration of target analyte

2.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples did not have detections, indicating that contamination from laboratory activities did not occur.

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that

may have been introduced during transport. Blank samples for field QC did not have detections, indicating that contamination from field activities did not occur.

2.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The percent recoveries were within the limits specified by the EPA.

2.7 BLANK SPIKE SAMPLES

The blank spike sample/blank spike duplicate (BSP/BSPD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the BSP/BSPD and relative percent difference (RPD) within the control limits specified by the SOPs.

2.8 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effect of the sample matrix on the sample preparation procedures and measurement methodologies. The below sample(s) were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
TD10880-3	PT-2S-90-10172017	8260C

The MS/MSD recoveries and the RPD between the MS and MSD results were within the acceptance limits specified by the EPA.

2.9 FIELD DUPLICATE SAMPLES

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for any field duplicates in this SDG are shown below.

Field Duplicate RPD Calculations:

Analyte (ug/L)	Primary Sample ID	Duplicate Sample ID	% RPD	Qualification
	PT-3-90-10172017	PT-3-90-10172017 DUP		
Trichloroethene	169	165	2.4	None, RPD < 20%
1,1-Dichloroethene	20.8	20.7	0.5	None, RPD < 20%

2.10 USE OF LABORATORY DATA QUALIFIERS

The results presented in this report were found to be compliant with the data quality objects for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. No qualifiers were applied to any data in this report.

3. Sample Delivery Group Number TD12350

3.1 SUMMARY

This DUSR summarizes the review of SDG number TD12350. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
PT-3D-126-11152017	N	TD12350-1	11/15/2017	WG	8260C, 8260B SIM
PT-3-90-11152017	N	TD12350-2	11/15/2017	WG	8260C, 8260B SIM
PT-1S-90-11152017	N	TD12350-3	11/15/2017	WG	8260C, 8260B SIM
PT-2S-90-11152017	N	TD12350-4	11/15/2017	WG	8260C, 8260B SIM
ERB-11152017	EB	TD12350-5	11/15/2017	WQ	8260C
TB-11152017	TB	TD12350-6	11/15/2017	WQ	8260C

Holding Times

Method	*Analyte(s)*	*Prep Holding Time*	*Analysis Holding Time*
8260C	*VOCs*	*NA*	*14 days*
8260B SIM	*1,4-Dioxane*	*7 days*	*40 days*

3.2 CASE NARRATIVE

The SGS lab report case narrative lists various quality control exceedances not covered in a standard Level II review, including continuing calibration verification exceedances. As a full Level IV validation was not requested, these quality control exceedances were not reviewed and thus no qualifiers were applied.

3.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per EPA protocol. Cooler temperature on arrival to the laboratory was 2.8 Degrees C.

3.4 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below. In cases when multiple dilutions are reported per sample, the reviewer chose the lowest dilution with results still within the calibration range and rejected the alternative result.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
PT-2S-90-11152017	TD12350-4	Trichloroethene	10x	Dilution required due to high concentration of target analyte

3.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples did not have detections, indicating that contamination from laboratory activities did not occur.

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that

may have been introduced during transport. Blank samples for field QC did not have detections, indicating that contamination from field activities did not occur.

3.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The percent recoveries were within the limits specified by the EPA.

3.7 BLANK SPIKE SAMPLES

The blank spike sample/blank spike duplicate (BSP/BSPD) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the BSP/BSPD and relative percent difference (RPD) within the control limits specified by the SOPs, with the following exceptions:

Sample Type	Method	Batch #	Analyte	%R	Qualification	Affected Samples
BSP/BSPD	8260C	VZ5488	Chloroethane	144/146	J-flag detects ND should not be qualified	None, all ND for analyte

3.8 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effect of the sample matrix on the sample preparation procedures and measurement methodologies. The below sample(s) were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
TD12350-4	PT-2S-90-11152017	8260C

The MS/MSD recoveries and the RPD between the MS and MSD results were within the acceptance limits specified by the EPA.

3.9 USE OF LABORATORY DATA QUALIFIERS

The results presented in this report were found to be compliant with the data quality objects for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100%. No qualifiers were applied to any data in this report.

4. Sample Delivery Group Number TD14014

4.1 SUMMARY

This DUSR summarizes the review of SDG number TD14014. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
PT-3-90-121917	N	TD14014-1	12/19/2017	WG	8260C, 8260B SIM
PT-2S-90-121917	N	TD14014-2	12/19/2017	WG	8260C, 8260B SIM
LB-7R-90-121917	N	TD14014-3	12/19/2017	WG	8260C, 8260B SIM
ISCO-1-S-85-121917	N	TD14014-4	12/19/2017	WG	8260C, 8260B SIM
ISCO-1-D-98-121917	N	TD14014-5	12/19/2017	WG	8260C, 8260B SIM
LB-7R-90-121917-DUP	FD	TD14014-6	12/19/2017	WG	8260C, 8260B SIM
ERB-121917	EB	TD14014-7	12/19/2017	WQ	8260C
TB-121917	TB	TD14014-8	12/19/2017	WQ	8260C

Holding Times

Method	*Analyte(s)*	*Prep Holding Time*	*Analysis Holding Time*
8260C	*VOCs*	*NA*	*14 days*
8260B SIM	*1,4-Dioxane*	*7 days*	*40 days*

4.2 CASE NARRATIVE

The SGS lab report case narrative lists various quality control exceedances not covered in a standard Level II review, including continuing calibration verification exceedances. As a full Level IV validation was not requested, these quality control exceedances were not reviewed and thus no qualifiers were applied.

4.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per EPA protocol. Cooler temperature on arrival to the laboratory was 1.0 Degrees C.

4.4 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below. In cases when multiple dilutions are reported per sample, the reviewer chose the lowest dilution with results still within the calibration range and rejected the alternative result.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
ISCO-1-S-85-121917	TD14014-4	VOCs by 8260C	4x	Dilution required due to high concentration of target analyte

4.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples did not have detections, indicating that contamination from laboratory activities did not occur, with the following exceptions:

Blank Type	Batch #	Analyte Detected in Blank	Concentration (ug/L)	Qualification	Affected Samples
Method Blank	VE2876	1,2,3-Trichlorobenzene	0.32 J	None, all samples ND for analyte	None

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Trip blanks are prepared when volatile analysis is requested to identify contamination that may have been introduced during transport. Blank samples for field QC did not have detections, indicating that contamination from field activities did not occur, with the following exceptions:

Blank Type	Date of Blank	Analyte Detected in Blank	Concentration (ug/L)	Qualification	Affected Samples
TB	12/19/17	Toluene	1.0	None, samples ND for analyte	None

4.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The percent recoveries were within the limits specified by the EPA, with the following exceptions:

Method	Sample ID	Lab ID	Surrogate	Recovery	Qualification
8260B SIM	ISCO-1-S-85-121917	TD14014-4	Toluene-D8	84/82	J/UJ parent sample
	ISCO-1-D-98-121917	TD14014-5	Toluene-D8	71/65	J/UJ parent sample

4.7 BLANK SPIKE SAMPLES

The blank spike sample (BSP) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the BSP within the control limits specified by the SOPs, with the following exceptions:

Sample Type	Method	Batch #	Analyte	%R	Qualification	Affected Samples
BSP	8260C	VE2876	Chloroethane	139	J-flag detects ND should not be qualified	None, all ND for analyte

4.8 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effect of the sample matrix on the sample preparation procedures and measurement methodologies. No client samples were used for MS/MSD analysis in this SDG.

The MS/MSD recoveries and the RPD between the MS and MSD results were within the acceptance limits specified by the EPA, with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualification	Affected Samples
MS/MSD	8260C	TD14135-2	Various	--	None, Not HA Sample	None

4.9 LABORATORY AND FIELD DUPLICATE SAMPLES

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for any field duplicates in this SDG are shown below.

Field Duplicate RPD Calculations:

Analyte (ug/L)	Primary Sample ID	Duplicate Sample ID	% RPD	Qualification
	LB-7R-90-121917	LB-7R-90-121917-DUP		
Trichloroethene	0.45	0.35	25.0	None, both < 5x RL
Bromoform	0.72	1.2	50.0	None, both < 5x RL
Acetone	23.5	25.8	9.3	None, RPD < 20%

4.10 USE OF LABORATORY DATA QUALIFIERS

The results presented in this report were found to be compliant with the data quality objects for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% useable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result	Validated Result	Reason for Qualifier
ISCO-1-D-98-121917	1,4-Dioxane	8.5	8.5 J	Poor surrogate recovery
ISCO-1-S-85-121917	1,4-Dioxane	20.9	20.9 J	Poor surrogate recovery

5. Sample Delivery Group Number TD18251

5.1 SUMMARY

This DUSR summarizes the review of SDG number TD18251. Samples were collected, preserved, and shipped following standard chain of custody protocol. Samples were also received appropriately, identified correctly, and analyzed according to the monitoring schedule. Chains of custody were appropriately signed and dated by the field and/or laboratory personnel.

Analyses were performed on the following samples:

Sample ID	Sample Type	Lab ID	Sample Collection Date	Matrix	Methods
PT-3-90-031518	N	TD18251-1	3/15/2018	GW	8260C, 8260B SIM
PT-2S-90-031518	N	TD18251-2	3/15/2018	GW	8260C, 8260B SIM
LB-7R-90-031518	N	TD18251-3	3/15/2018	GW	8260C, 8260B SIM
ISCO-1-D-98-031518	N	TD18251-4	3/15/2018	GW	8260C, 8260B SIM
ISCO-1-S-85-031518	N	TD18251-5	3/15/2018	GW	8260C, 8260B SIM
ERB-031518	EB	TD18251-6	3/15/2018	WQ	8260C
ISCO-1-S-85-031518-DUP	FD	TD18251-7	3/15/2018	GW	8260C

Holding Times

Method	*Analyte(s)*	*Prep Holding Time*	*Analysis Holding Time*
8260C	*VOCs*	*NA*	*14 days*
8260B SIM	*1,4-Dioxane*	*7 days*	*40 days*

5.2 CASE NARRATIVE

The SGS lab report case narrative lists various quality control exceedances not covered in a standard Level II review, including continuing calibration verification exceedances. As a full Level IV validation was not requested, these quality control exceedances were not reviewed and thus no qualifiers were applied.

5.3 HOLDING TIMES/PRESERVATION

The samples were prepared and analyzed within the holding time and preservation criteria specified per EPA protocol, with the following exceptions:

- The following samples were prepared outside of holding time and should be flagged J/UJ:
  - ISCO-1-D-98
  - ISCO-1-S-85
  - LB-7R-90
  - PT-3-90

Cooler temperature on arrival to the laboratory was 3.0 Degrees C

5.4 REPORTING LIMITS AND SAMPLE DILUTION

All dilutions were reviewed and found to be justified. Any non-detects with elevated reported limits are noted and explained below. In cases when multiple dilutions are reported per sample, the reviewer chose the lowest dilution with results still within the calibration range and rejected the alternative result.

Sample ID	Lab ID	Analyte/ Method	Dilution Factor	Issue/Explanation
PT-2S-90-031518	TD18251-2	8260C	5x	Dilution required due to matrix interference

5.5 BLANK SAMPLE ANALYSIS

Method blanks are prepared by the analytical laboratory and analyzed concurrently with the project samples to assess possible laboratory contamination. Method blank samples did not have detections, indicating that contamination from laboratory activities did not occur, with the following exceptions:

Blank Type	Batch #	Analyte Detected in Blank	Concentration (ug/L)	Qualification	Affected Samples
Method Blank	VK2211	Hexachlorobutadiene	0.48	None, samples ND for analyte	None

Equipment blanks are prepared to identify contamination that may have been introduced while decontaminating sampling equipment. Blank samples for field QC did not have detections, indicating that contamination from field activities did not occur.

5.6 SURROGATE RECOVERY COMPLIANCE

Surrogates, also known as deuterated monitoring compounds, are compounds added to each sample prior to sample preparation to evaluate the percent recovery (%R) to ensure that the organic analytical method is efficient. The percent recoveries were within the limits specified by the EPA.

5.7 BLANK SPIKE SAMPLES

The blank spike sample (BSP) analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. Compounds associated with the BSP within the control limits specified by the SOPs, with the following exceptions:

Sample Type	Method	Batch #	Analyte	%R	Qualification
BSP	8260C	VE2944	Methyl ethyl ketone	151	None, samples ND for analyte

5.8 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicate (MS/MSD) data are used to assess the precision and accuracy of the analytical method and evaluate the effect of the sample matrix on the sample preparation procedures and measurement methodologies. The below sample(s) were used for MS/MSD:

Lab Sample Number	Matrix Spike/ Matrix Spike Duplicate Sample Client ID	Method(s)
TD18251-2	PT-2S-90-031518	8260C

The MS/MSD recoveries and the RPD between the MS and MSD results were within the acceptance limits specified by the EPA, with the following exceptions:

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualification	Affected Samples
MS/MSD	8260C	TD18251-2	Trichloroethylene	67/46	J/UJ	PT-2S-90-031518
MS/MSD	8260C	TD18194-1	Various	--	None, Not HA Sample	None
MS/MSD	8260B SIM	TD18246-1	1,4-Dioxane	--	None, Not HA Sample	None

Sample Type	Method	Parent Sample Number	Analyte	%R/RPD	Qualification	Affected Samples
MS/MSD	8260B SIM	FA52696-3	1,4-Dioxane	--	None, Not HA Sample	None

5.9 LABORATORY AND FIELD DUPLICATE SAMPLES

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The RPD comparison for any field duplicates in this SDG are shown below.

Field Duplicate RPD Calculations:

Analyte (ug/L)	Primary Sample ID	Duplicate Sample ID	% RPD	Qualification
	ISCO-1-S-85-031518	ISCO-1-S-85-031518-DUP		
1,2-Dichloroethane	*1 U*	0.34	98.5	None, abs diff < RL
Bromodichloromethane	*1 U*	0.4	85.7	None, abs diff < RL
Chloroform (Trichloromethane)	0.46	0.5	8.3	None, RPD < 20%
1,1-Dichloroethane	0.48	0.56	15.4	None, RPD < 20%
Bromoform	0.61	0.56	8.5	None, RPD < 20%
Trichloroethene	164	160	2.5	None, RPD < 20%

5.10 USE OF LABORATORY DATA QUALIFIERS

The results presented in this report were found to be compliant with the data quality objects for the project and the guidelines specified by analytical method. Based on the review of this report, the data are 100% usable. A summary of qualifiers applied to this SDG are shown below.

Sample ID	Analyte	Reported Result (ug/L)	Validated Result (ug/L)	Reason for Qualifier
ISCO-1-D-98-031518	1,4-Dioxane	5.7	5.7 J	Holding time exceedance
ISCO-1-S-85-031518	1,4-Dioxane	22.4	22.4 J	Holding time exceedance
LB-7R-90-031518	1,4-Dioxane	3.3	3.3 J	Holding time exceedance
PT-3-90-031518	1,4-Dioxane	6.6	6.6 J	Holding time exceedance
PT-2S-90-031518	Trichloroethene	645	645 J	Matrix spike recovery

References

1. United States Environmental Protection Agency, 2017b. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January.

Glossary

Laboratory qualified and unqualified data are verified against the supporting documentation during the review process. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with EPA National Functional Guidelines:

- Concentration (C) Qualifiers:
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound was found in the sample and its associated blank. Its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers:
  - E The compound was quantitated above the calibration range.
  - D The concentration is based on a diluted sample analysis.
- Validation Qualifiers:
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - J+ The result is an estimated quantity, but the result may be biased high.
  - J- The result is an estimated quantity, but the result may be biased low.
  - UJ The compound was not detected above the reported sample quantitation limit; however, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicated the presence of a compound for which there is presumptive evidence to make a tentative identification; the associated numerical value is therefore an estimated concentration only.
  - R The sample results were rejected as unusable; the compound may or may not be present in the sample.
- Sample Types:
  - N Primary Sample
  - FD Field Duplicate Sample
  - FB Field Blank Sample
  - EB Equipment Blank Sample
  - TB Trip Blank Sample

RECEIVED
By KHARRING at 3:21 pm, May 24, 2018

PRIMA ENVIRONMENTAL INC.

August 15, 2017

Bruce Travers
Haley & Aldrich, Inc.
One Arizona Center
400 East Van Buren Street, Suite 545
Phoenix, Arizona 85004

RE: Final Report of Findings "Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs", Plymouth Tube Chandler H&A Project Number: 128159-003 Task 9

Dear Mr. Travers:

Enclosed is the final report of findings entitled "Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs" that describes bench testing conducted on soil and groundwater from the Plymouth Tube Chandler site. If you have any questions, please contact me at cschreier@primaenvironmental.com or 916-939-7300. Thank you for the opportunity to be of service.

Sincerely,
PRIMA Environmental, Inc.

Cindy G. Schreier, Ph.D.
President and Chief Scientist

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Report of Findings

Bench-Scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs

Plymouth Tube Chandler

August 15, 2017

Submitted to

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Cindy G. Schreier, Ph.D., President — Aug 15, 2017 **Date**

EXECUTIVE SUMMARY

Bench-scale treatability testing was conducted on soil (PT-6D) and groundwater (LB-7R)) from the Plymouth Tube site located in Chandler, Arizona to evaluate the suitability of activated persulfate and potassium permanganate ($KMnO_4$) for in situ chemical oxidation (ISCO) of chemicals of concern (COCs). The primary COCs at this site are 1,4-dioxane and trichloroethene (TCE). Two forms of activated persulfate were evaluated: alkaline activated persulfate (AP-pH) and iron activated persulfate (AP-Fe). Testing measured soil oxidant demand (SOD) for each oxidant, assessed the ability of each oxidant to remove COCs, and assessed the ability of soil to mitigate changes in pH associated with the use of activated persulfate.

Laboratory testing demonstrated that AP-pH, AP-Fe, and $KMnO_4$ can all destroy 1,4-dioxane and TCE, but the efficacy varied with oxidant and/or oxidant concentration. Low dose (1 g/L SP) AP-pH and AP-Fe tests destroyed 56-70% of 1,4-dioxane within 28 days and 17-60% TCE. In contrast, high dose tests (10 g/L SP), destroyed over 99% of 1,4-dioxane and TCE within 7 days. For $KMnO_4$, TCE was not detected in any sample, while 18% of 1,4-dioxane was destroyed within 28 days in the low dose (0.25 g/L $KMnO_4$) test and 43% was destroyed in the high dose test (1 g/L $KMnO_4$). In all tests, oxidant was still present at 28 days, indicating that additional COC removal would likely occur given a longer contact time.

Several non-target VOCs, including trihalomethanes and 1,1,2-trichloroethane, were detected in the high dose AP-Fe and both of the $KMnO_4$ tests, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 μg/L and were most likely present in untreated groundwater, but masked by high concentrations of non-target VOCs. Concentrations of some compounds were notably higher (up to 820 μg/L) in the AP-Fe tests. Such compounds are reactive intermediates and are expected to be destroyed given longer reaction times.

Treatment with AP-pH increased the pH to above 11, but the pH should return to near-pretreatment conditions once SP is consumed. Treatment with the high dose AP-Fe decreased pH to 2.2. Treatment with $KMnO_4$ did not affect pH.

Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil buffered between 1 and 10 mmol H^+/kg soil, implying that it can neutralize the acid generated by

decomposition of less than 1.2 g SP/kg soil. Soil also buffered between 10 and 100 mmol OH-/kg soil, indicating that more than 10 mmol OH-/kg soil (1.3 mL of 25% NaOH/kg soil) must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Based on the results of this study, PRIMA recommends that AP-pH or $KMnO_4$ be considered for use at this site. Both reacted with all COCs, though treatment of 1,4-dioxane will likely be faster using AP-pH. PRIMA suggests not using AP-Fe because this oxidant could potentially significantly reduce groundwater pH.

TABLE of CONTENTS

EXECUTIVE SUMMARY ..... **i**
List of Figures ..... **v**
List of Tables ..... **vi**
ACRONYMS and ABBREVIATIONS ..... **vii**
CHEMICAL FORMULAE ..... **viii**
1.0 INTRODUCTION **1**
1.1 Background 1
1.2 Study Objectives 2
2.0 MATERIALS and METHODS **4**
2.1 Materials 4
2.2 Preparation and Characterization of Soil and Groundwater 4
2.2.1 Soil 4
2.2.2 Groundwater 5
2.3 Initial NaOH Requirement 5
2.4 Soil Oxidant Demand / Persistence 5
2.4.1 $KMnO_4$ 5
2.4.2 Activated Persulfate 6
2.5 COC Oxidation / Secondary Effects 6
2.6 Long-Term Soil Buffering 6
2.7 Analytical Methods 8
2.8 Calculations 8
2.8.1 Theoretical Oxidant Demand due to COCs 8
2.8.2 SOD 9
2.8.3 Percent Removed/Destroyed 9
3.0 RESULTS and DISCUSSION **11**
3.1 Untreated Soil and Groundwater 11
3.2 SOD/Persistence 11
3.2.1 Alkaline Activated Persulfate SOD 11
3.2.2 $KMnO_4$ SOD 15
3.3 COC Removal 15
3.4 Secondary Parameters 19
3.5 Long-Term Soil Buffering 19
4.0 SUMMARY and CONCLUSIONS **24**

APPENDIX A (Chain of Custody)

APPENDIX B (Analytical Reports)

LIST of FIGURES

Figure 1. COC Removal Test – Day 28 7
Figure 2. AP-pH SOD. 13
Figure 3. AP-Fe SOD 14
Figure 4. $KMnO_4$ SOD. 16
Figure 5. Buffering Curves – Acid Range 22
Figure 6. Buffering Curves – Base Range 23

LIST of TABLES

Table 1. Theoretical Stoichiometric Dose Requirements 2
Table 2. Initial Conditions for COC Removal Tests 7
Table 3. Analytical Methods 8
Table 4. COCs and Secondary Parameters in Untreated Soil and Water. 12
Table 5. Theoretical Oxidant Demand due to COCs in Soil and Water 12
Table 6. Initial NaOH Requirement. 12
Table 7. COC Removal Results – COC Concentrations. 17
Table 8. COC Removal Results – Mass Balance. 18
Table 9. COC Removal - Secondary Parameters. 21

ACRONYMS and ABBREVIATIONS

AP-Fe	iron activated persulfate
AP-pH	alkaline activated persulfate
COCs	chemicals of concern
g	grams
kg	kilograms
L	liters
mg	milligrams
mL	milliliters
mmol	millimoles
mV	millivolts
µg	micrograms
ORP	oxidation reduction potential
SOD	soil oxidant demand
SP	sodium persulfate
TCE	trichloroethene
TOC	total organic carbon
VOCs	volatile organic compounds

CHEMICAL FORMULAE

C_2HCl_3	trichloroethene
$C_4H_8O_2$	1,4-dioxane
CO_2	carbon dioxide
H^+	acid/proton
H_2O	water
$KMnO_4$	potassium permanganate
MnO_2	manganese dioxide
Na^+	sodium ion
NaOH	sodium hydroxide
$Na_2S_2O_8$	sodium persulfate
OH^-	hydroxide ion
SO_4^{2-}	sulfate

1.0 INTRODUCTION

Bench-scale treatability testing was conducted on soil (PT-6D) and groundwater (LB-7R) from the Plymouth Tube site located in Chandler, Arizona to evaluate the suitability of activated persulfate and potassium permanganate ($KMnO_4$) for in situ chemical oxidation (ISCO) of chemicals of concern (COCs). The primary COCs at this site are 1,4-dioxane and trichloroethene (TCE). Two forms of activated persulfate were evaluated: alkaline activated persulfate (AP-pH) and iron activated persulfate (AP-Fe).

1.1 Background

Sodium Persulfate. Sodium persulfate (SP) is an established technology for the oxidation of a wide range of organic compounds, including site COCs. SP is commonly activated by high pH, ferrous iron, chelated iron or hydrogen peroxide (HP) in order to generate the persulfate radical. **Equations 1** and **2** show theoretical reactions for conversion of primary COCs to carbon dioxide (CO_2) and water (H_2O) by sodium persulfate ($Na_2S_2O_8$). The stoichiometric persulfate requirements based on these reactions are given in **Table 1**. SP requirements are expected to be similar for activated persulfate. In practice, a greater-than-stoichiometric dose of SP will usually be required because SP is a non-selective oxidant that will react with natural organic matter and other non-target compounds and because SP may naturally decompose.

$$3Na_2S_2O_8 + \underset{TCE}{C_2HCl_3} + 4H_2O \rightarrow 2CO_2 + 6SO_4^{2-} + 6Na^+ + 9H^+ + 3Cl^- \qquad \text{Eqn. 1}$$

$$10Na_2S_2O_8 + \underset{1,4\text{-}dioxane}{C_4H_8O_2} + 6H_2O \rightarrow 4CO_2 + 20SO_4^{2-} + 20Na^+ + 20H^+ \qquad \text{Eqn. 2}$$

Persulfate decomposes to generate sulfuric acid. The change in sulfate concentration and the effect on pH will depend upon the amount of persulfate used, the rate at which it decomposes, the presence of cations that can precipitate sulfate, and the buffering ability of site soil and groundwater. Other potential secondary effects include oxidation of soil-bound chromium to Cr(VI) and mobilization of metals due to changes in pH. The magnitude, duration, and significance of any such affects are site specific.

Table 1. Theoretical Stoichiometric Dose Requirements.

COC	g SP/g COC	g $KMnO_4$/g COC
Trichloroethene	5.4	2.4
1,4-Dioxane	27	12.5*

* Reactivity uncertain.

Potassium Permanganate. Injection of $KMnO_4$ is an established technology for the *in situ* oxidation of chlorinated ethenes. It may also react slowly with 1, 4-dioxane. The theoretical chemical reactions for the oxidation of TCE and 1,4-dioxane by $KMnO_4$ are given in **Equations 3** and **4**. The stoichiometric dose requirements are shown in **Table 1**. In practice, a greater-than-stoichiometric dose of $KMnO_4$ may be required because $KMnO_4$ is a non-selective oxidant that can react with natural organic matter and other non-target compounds in soil and water.

$$2KMnO_4 + \underset{TCE}{C_2HCl_3} + \rightarrow 2CO_2 + 2MnO_2 + H^+ + 2K^+ + 3Cl^- \qquad \text{Eqn. 3}$$

$$20KMnO_4 + \underset{1,4\text{-}dioxane}{3C_4H_8O_2} + 20H^+ \overset{?}{\rightarrow} 12CO_2 + 20MnO_2 + 22H_2O + 20K^+ \qquad \text{Eqn. 4}$$

Treatment of soil and groundwater with $KMnO_4$ may affect secondary water quality. The most common effect is an increase in the aqueous concentration of Cr(VI). Cr(VI) is a natural impurity in permanganate; in addition, both $KMnO_4$ and its by-product, manganese dioxide (MnO_2), are known to oxidize soil chromium to water soluble Cr(VI). The amount of Cr(VI) formed, if any, and its ability to attenuate, are site-specific.

1.2 Study Objectives

Batch tests were conducted to evaluate AP-pH, AP-Fe and $KMnO_4$. Specific goals were to:

- measure the initial base requirement of soil and groundwater.
- measure the soil oxidant demand/persistence for each oxidant.
- assess COC destruction by each oxidant.

- estimate the minimum aqueous SP or $KMnO_4$ concentration needed to achieve COC destruction.
- evaluate the effect of each treatment on secondary water quality parameters such as pH.
- assess the ability of soil to buffer changes in pH associated with the use of activated persulfate.

The specific tests conducted to achieve these goals are described in **Section 2.0** of this report. Results and Summary/Conclusions are presented in **Sections 3.0 and 4.0**, respectively.

2.0 MATERIALS and METHODS

2.1 Materials

Iron EDTA, Fe EDTA. Dissolve® brand iron ethylenediaminetetraacetic acid (Fe-EDTA) was obtained from Peroxychem (www.peroxychem.com). Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Potassium Permanganate, $KMnO_4$. RemOx brand $KMnO_4$ was obtained from Carus (www.caruscorporation.com)**.** Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Sodium Hydroxide, NaOH. Reagent grade NaOH was used in this study. Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Sodium Persulfate, SP. Klozur® brand SP was obtained from Peroxychem (www.peroxychem.com). Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

2.2 Preparation and Characterization of Soil and Groundwater

2.2.1 Soil

One soil sample (PT-6D) consisting of 2 five gallon buckets was received on May 25, 2017 (see **Appendix A** for chain of custody). Bulk soil was a mixture of sand with some silt and many rocks ranging in size from pea gravel to about 5 inches in diameter. Soil from one bucket was used in this study. Prior to testing, it was homogenized by passing it through a No. 4 sieve to remove particles greater than 3/16 inches then mixing by hand until it was visually homogeneous. The mass passing the 4 mesh sieve was 14.8 kg, while the mass retained was 17.4 kg. Soil passing the 4 mesh sieve (hereafter referred to as “soil”) was analyzed for:

- COCs
    - 1,4-dioxane

    - Volatile Organic Compounds (VOCs)
- Total manganese
- Total Organic Carbon (TOC)

2.2.2 Groundwater

One groundwater sample (LB-7R), consisting of twenty 1 L amber bottles, was received on May 25, 2017 (see **Appendix A** for chain of custody). The water was stored in a refrigerator (4° Celsius) until needed. Prior to testing, water was homogenized by pumping chilled water from each bottle into a large Tedlar bag, mixing, then pumping the water back into the amber bottles. Homogenized groundwater was clear and colorless. It was analyzed for:

- COCs
    - 1,4-dioxane
    - VOCs
- Alkalinity
- Dissolved manganese
- Oxidation Reduction Potential (ORP)
- pH
- Sulfate

2.3 Initial NaOH Requirement

The amount of NaOH needed to overcome the initial buffering capacity of soil and of groundwater was measured. Dilute NaOH was added to soil or groundwater and until the pH reached 11. Additional NaOH was added as needed until the pH remained near 11 for 60 consecutive minutes. This information was used to set the amount of NaOH for AP-pH tests.

2.4 Soil Oxidant Demand / Persistence

2.4.1 $KMnO_4$

The $KMnO_4$ SOD was measured over time. Three series of five vials each containing 20 grams homogenized soil and 20 mL $KMnO_4$ solution ($KMnO_4$ dissolved in deionized water) were prepared. Each series contained a different dose of $KMnO_4$: 250 milligrams per liter (mg/L) (250 milligrams per kilogram [mg/kg]), 990 mg/L (990 mg/kg), and 2,500 mg/L (2,500 mg/kg). The vials were placed on a shaker table. Periodically, at approximately 6 hours, 1 day, 2 days, 8 days, and 15 days, one vial from each series was destructively sampled and the aqueous phase analyzed for residual permanganate. SOD was calculated as described in **Section 2.8.2.**

2.4.2 Activated Persulfate

SOD/oxidant persistence was measured for AP-pH and AP-Fe. For each oxidant, two series of reactors (low dose and high dose) comprised of four replicates were prepared. Each reactor contained 60 g soil, 60 mL of activated persulfate solution, such that the initial SP concentration was approximately 5 grams per liter (g/L) in the low dose tests and 15 g/L in the high dose tests. For AP-pH, the amount of NaOH was a 2:1 mole ratio of NaOH:SP, plus the initial NaOH requirement measured in **Section 2.3**. Reactors were shaken continuously. One replicate from each series was destructively sampled at 2, 4, 8 and 21 days, and analyzed for residual SP. SOD was calculated as described in **Section 2.8.2**.

2.5 COC Oxidation / Secondary Effects

Batch tests were conducted to evaluate COC removal and assess the effect of treatment on selected secondary parameters. Fifteen (15) reactors were prepared by combining 317 g soil, 900 milliliter (mL) groundwater, and 50 mL total of SP stock solution, $KMnO_4$ stock solution, and deionized (DI) water as appropriate to give the initial conditions shown in **Table 2** with a soil to liquid ratio of 1:3. Reactors were stored at room temperature (20°C) in the dark. At the times specified in **Table 2**, the reactors were destructively sampled and the water phases were analyzed for VOCs, 1,4-dioxane, chloride, dissolved metals (iron, manganese), ORP, pH and residual oxidant (if appropriate). Soil was not analyzed for COCs because neither 1,4-dioxane nor VOCs would be expected to sorb strongly to soil under the conditions of the test. **Figure 1** shows the reactors immediately prior to sampling at Day 28.

2.6 Long-Term Soil Buffering

Soil buffering curves were generated to estimate the amount of acid (generated by decomposition of SP) and the amount of base (needed for AP-pH activation) that can be neutralized by soil over the long-term. Soil and dilute sulfuric acid or dilute NaOH were combined in a 1:1 soil to liquid ratio. The pH was measured periodically for 14 days.

Table 2. Initial Conditions for COC Removal Tests

Test	# Reps	Initial SP	Initial $KMnO_4$	Activator	Sample Time
		g/L	g/L		days
Time 0	1	0	0	n/a	0
Control	2	0	0	n/a	7, 28
AP-pH Low	2	1	0	pH > 11	
AP-pH High	2	10	0		
AP-Fe Low	2	1	0	150 mg/L Fe	
AP-Fe High	2	10	0		
KMnO4 Low	2	0	0.25	n/a	
KMnO4 High	2	0	1	n/a	

n/a = not applicable

Figure 1. COC Removal Test – Day 28 *From left*: Control, AP-pH Low, AP-pH High, AP-Fe Low, AP-Fe High, $KMnO_4$ Low, $KMnO_4$ High.

2.7 Analytical Methods

The methods for each analysis and the laboratory that performed the analyses are summarized in **Table 3**.

Table 3. Analytical Methods.

Analyte	Method	Lab performing test*
1,4-Dioxane	EPA 8260-SIM	McCampbell
VOCs	EPA 8260	Alpha Analytical
Alkalinity	SM2320B	Alpha Analytical
Chloride	EPA 300	Alpha Analytical
Metals (total or dissolved)	EPA 6020	Alpha Analytical
ORP	Probe	PRIMA
pH	Probe	PRIMA
Residual permanganate	Visible spectroscopy	PRIMA
Residual persulfate	FAS/KMnO4 titration	PRIMA
Sulfate	Hach**	PRIMA
TOC	EPA 9060	McCampbell

* Alpha Analytical (Sparks, NV); McCampbell Analytical (Pittsburg, CA)
** Hach DR2800 spectrophotometer and appropriate Hach test reagents.

2.8 Calculations

2.8.1 Theoretical Oxidant Demand due to COCs

The theoretical amount of oxidant needed to convert a COC to carbon dioxide and water is the concentration of the COC in the matrix (soil or water, see **Section 3.1**) times the stochiometric requirement **(Table 1)**. The total theoretical demand is the sum of the individual COC demands, as shown in **Equation 5**.

$$OD_{COCs} = \sum_{1}^{i} COC_i \; x \; SR_i$$

Eqn. 5

where

- OD_{COCs} is total theoretical oxidant demand due to COCs, in g/kg for soil or g/L for water
- $[COC]_i$ is concentration of *i*th COC in matrix, in g/kg for soil or g/L for water
- SR_i is the stoichiometric oxidant requirement (g oxidant / g COC) of the *i*th COC based on theoretical equations for conversion of the COC to CO_2.

2.8.2 SOD

SOD was calculated according to **Equation 6**.

$$SOD = ([Ox]_{init} - [Ox]_t) \; x \; (V/M)$$

Eqn. 6

where

- SOD is soil oxidant demand, in g (or mg) oxidant/kg soil
- $[Ox]_{init}$ is the initial concentration of oxidant, in g (or mg) oxidant/L
- $[Ox]_t$ is the concentration of oxidant at time, t, in g (or mg) oxidant/L
- V is total volume of the aqueous phase, in L
- M is mass of soil, in kg

2.8.3 Percent Removed/Destroyed

For the COC Removal tests, the percent remaining and destroyed were calculated by comparing the mass of each COC in the test reactor to the mass in the Time 0 reactor according to **Equations 7** and **8**. Concentrations in soil are assumed to be negligible.

$$\% \text{ Remaining in Aqueous} = 100 \; x \; (C_{aq}V_{aq})/(C_{aq,T0}V_{aq})$$

Eqn. 7

$$\% \text{ Destroyed} = 100 - \% \text{ Remaining in Aqueous}$$

Eqn. 8

where

- C_{aq} is the aqueous concentration (μg/L) in the control or test,
- $C_{aq,T0}$ is the aqueous concentration (μg/L) in the time 0 sample
- V_{aq} is the aqueous volume (L) of the control or test

3.0 RESULTS and DISCUSSION

3.1 Untreated Soil and Groundwater

The concentrations of COCs in soil and groundwater are shown in **Table 4**. Complete analytical reports are provided in **Appendix B**. The only detectable COCs in water were TCE (12,000 microgram per liter [μg/L]) and 1,4-dioxane (1,300 μg/L). No COCs were detected in soil. The theoretical oxidant demand of soil or water due to these COCs is given in **Table 5**. The demands are low – up to 1.2 mg oxidant/kg soil for the soils and 1.6-180 mg oxidant/L for the waters. In practice, more oxidant will likely be needed due to reactions with non-target compounds and/or decomposition of the oxidant.

Secondary parameters in soil and water are also provided in **Table 5**. Groundwater alkalinity was 360 mg/L as calcium carbonate ($CaCO_3$), ORP was 208 millivolt (mV), pH was 6.93 and sulfate was 34 mg/L. Soil did not contain measurable TOC.

The initial NaOH requirement for soil and groundwater is given in **Table 6**. The amount of NaOH needed to increase pH to 11 is 0.013 mol OH^-/kg soil (1.6 mL 25%NaOH/kg soil) for soil and 0.012 mol OH^-/L GW (1.5 mL 25%NaOH/L GW) for groundwater.

3.2 SOD/Persistence

3.2.1 Activated Persulfate SOD

Results from the AP-pH and AP-Fe SOD / persistence tests are shown in **Figures 2** and **3**, respectively. For AP-pH, the 21-day SOD was 0.6 g SP/kg soil when the initial SP concentration was 5 g/L and 2.0 g SP/kg soil when the initial SP concentration was 15 g SP/kg soil. For AP-Fe, the SOD was 1.2 g SP/kg soil when the initial SP concentration was 5 g/L and 5.0 g SP/kg soil when the initial SP concentration was 15 g SP/kg soil. Increased SOD with higher initial concentration of SP is a common phenomenon.

Table 4. COCs and Secondary Parameters in Untreated Soil and Water.

Analyte	Units	Untreated Soil	Untreated GW
COCs			
1,4-dioxane	mg/kg or µg/L	< 0.020	1,300
vinyl chloride	µg/kg or µg/L	< 20	< 80
1,1-dichloroethene	µg/kg or µg/L	< 20	690
cis-dichloroethene	µg/kg or µg/L	< 20	< 80
trichloroethene	µg/kg or µg/L	< 20	12,000
tetrachloroethene	µg/kg or µg/L	< 20	< 80
*Metals**			
Manganese	mg/L	180	0.059
Other Parameters			
Alkalinity	mg/L	n.m.	360
ORP	mV	n.m.	208
pH	mg/L	n.m.	6.93
Sulfate	mg/L	n.m.	34
TOC	mg/kg	< 610	n.m.

* Total metals in soil, dissolved metals in water

n.m. = not measured

Table 5. Theoretical Oxidant Demand due to COCs in Soil and Water.

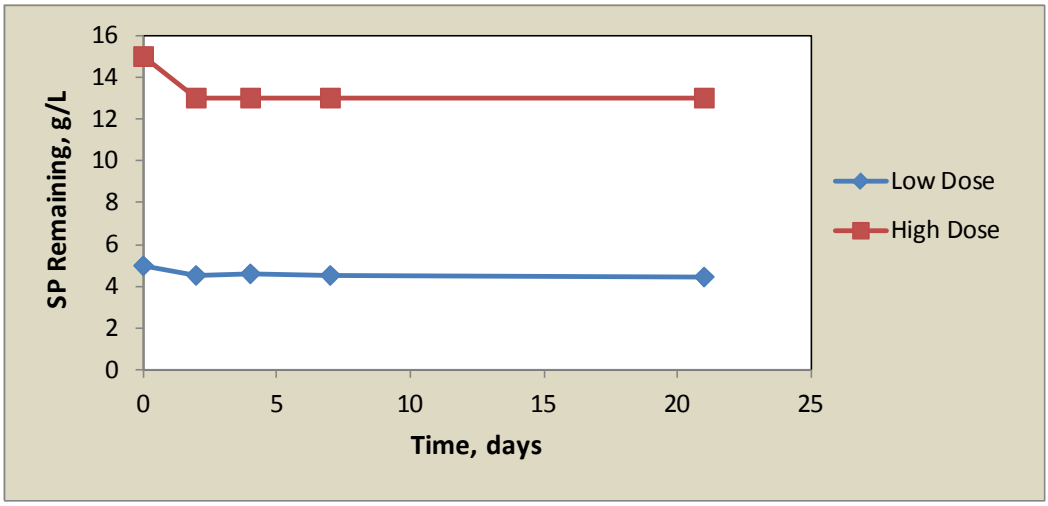
Sample	Units	Oxidant	
		SP	KMnO4
Untreated Soil	mg oxidant / kg soil	0	0
Untreated GW	mg oxidant / L GW	110	48

Table 6. Initial NaOH Requirement.

Sample	NaOH Requirement			
	moles OH^-/kg	mL 25% NaOH/kg	moles OH^-/L	mL 25% NaOH/L
Soil	0.013	1.6		
Groundwater			0.012	1.5

Time, Days	SP Remaining, g/L Soln.		SP Consumed, g/kg Soil	
	Low Dose	High Dose	Low Dose	High Dose
0	5.0	15	0	0
2	4.5	13	0.5	2.0
4	4.6	13	0.4	2.0
7	4.5	13	0.5	2.0
21	4.4	13.0	0.6	2.0

Note: SP = sodium persulfate



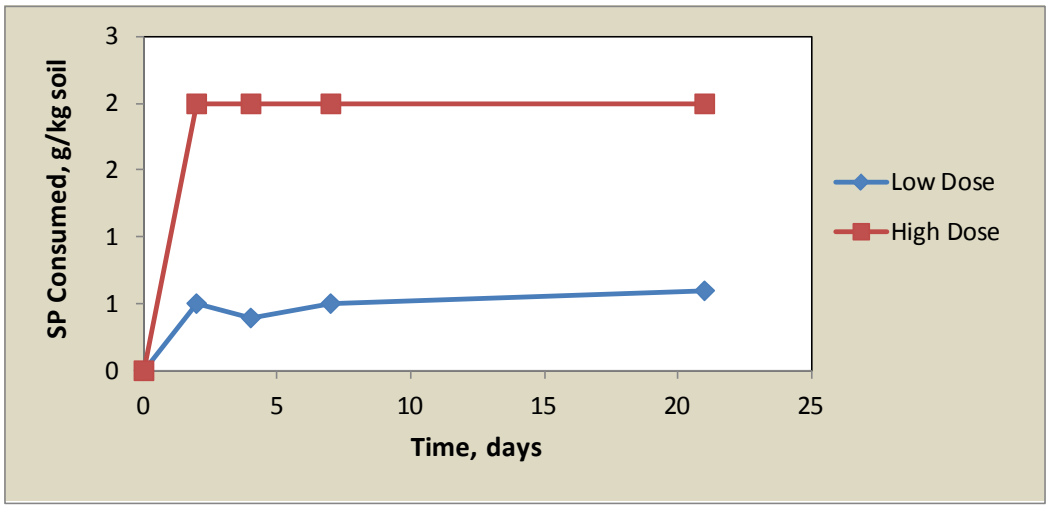
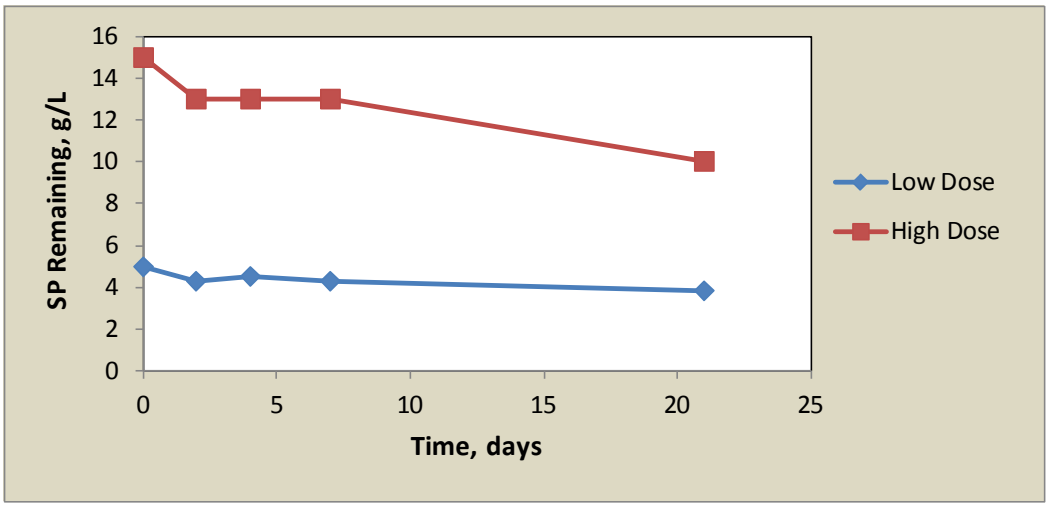


Figure 2. AP-pH SOD.

Time, Days	SP Remaining, g/L Soln.		SP Consumed, g/kg Soil	
	Low Dose	High Dose	Low Dose	High Dose
0	5.0	15	0	0
2	4.3	13	0.7	2.0
4	4.5	13	0.5	2.0
7	4.3	13	0.7	2.0
21	3.8	10.0	1.2	5.0

Note: SP = sodium persulfate



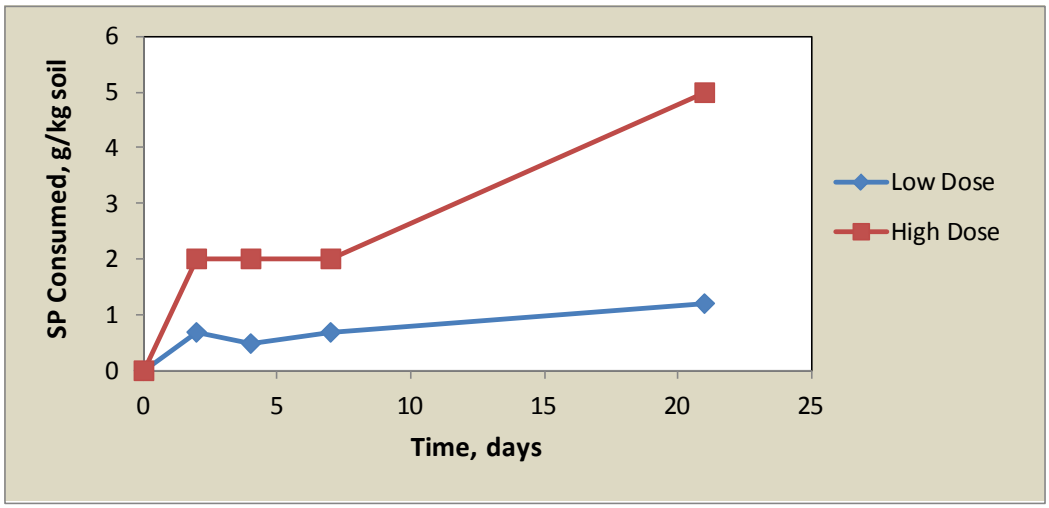


Figure 3. AP-Fe SOD.

3.2.2 $KMnO_4$ SOD

Results from the $KMnO_4$ soil oxidant demand / persistence tests are shown in **Figure 4**. The SOD was low, ranging from 45-280 mg $KMnO_4$/kg soil. In both cases, the SOD was higher when the initial concentration of $KMnO_4$ was higher, which is a common phenomenon.

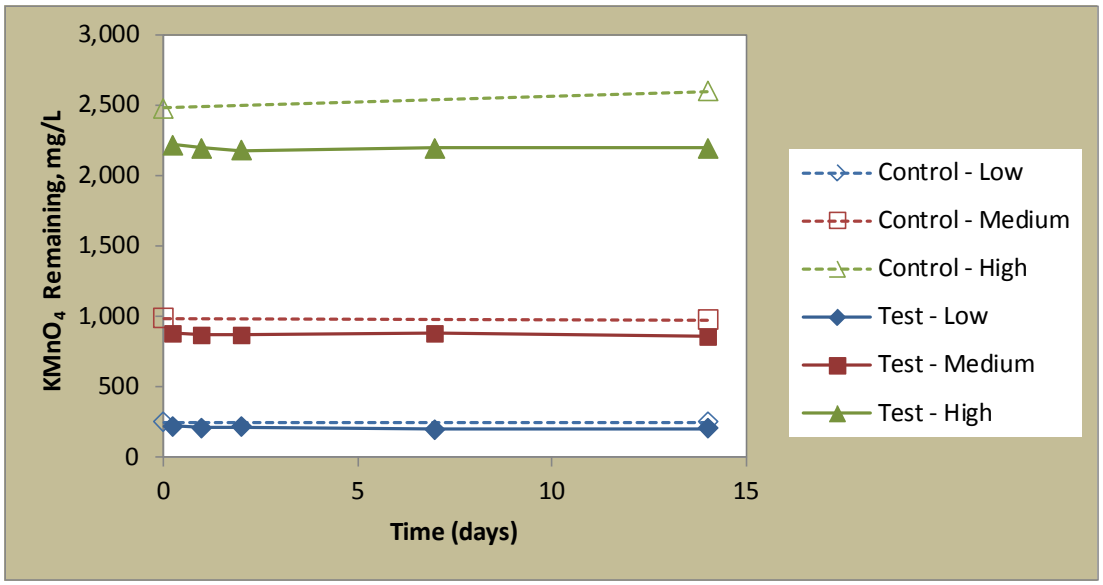
3.3 COC Removal

The concentrations of COCs from the COC Removal tests and the mass balances relative to the Time 0 are shown in **Tables 7** and **8**, respectively. Complete analytical reports are included in **Appendix B**.

All treatments decreased concentrations of all COCs in the time frame of the study, but some treatments were more effective than others. Low dose (1 g/L SP) AP-pH decreased the concentration of 1,4-dioxane from 1,000 µg/L at Time 0 to 300 µg/L by Day 28, while the high dose (10 g/L) test decreased the concentration to below the reporting limit of 0.5 µg/L within 7 days. AP-Fe behaved similarly, with the low dose (1 g SP/L) decreasing 1,4-dioxane to 440 µg/L by Day 28 and the high dose (10 g SP/L) to < 7.2 µg/L. The low dose (0.25 g/L $KMnO_4$) $KMnO_4$ test decreased the concentration to 820 µg/L, but this was the similar to the concentration seen in the control test. In contrast, the high dose (1 g/L $KMnO_4$) $KMnO_4$ test decreased 1,4-dioxane to 570 µg/L by 28 days. TCE decreased from 7,200 mg/L at Time 0 to 2,900 mg/L by Day 28 in the AP-pH low dose test and to 6,000 mg/L in the AP-Fe low dose test. It was not detected in the AP-pH high dose, the AP-Fe high dose test or any of the $KMnO_4$ tests. 1,1-DCE was detected in the Time 0 and Control samples, but not in any other sample. Oxidant was present in all reactors at Day 28, indicating that additional oxidation could occur given longer reaction times.

Several non-target VOCs were detected in the high dose AP-Fe and both of the $KMnO_4$ tests. These include 1,1-dichloroethane, 1,2-dichloroethane, chloromethane, dibromochloromethane, chloroform, bromodichloromethane, and 1,1,2-trichloroethane, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 µg/L for each analyte and were most likely present in untreated

Time (day)	$KMnO_4$ Remaining, mg/L soln.						$KMnO_4$ Consumed mg/kg soil		
	Control - Low	Control - Medium	Control - High	Test - Low	Test - Medium	Test - High	Test - Low	Test - Medium	Test - High
0	250	990	2,480						
0.25				222	880	2,220	28	110	260
1				212	870	2,200	38	120	280
2				220	870	2,180	30	120	300
7				203	880	2,200	47	110	280
14	250	980	2,600	205	860	2,200	45	130	280



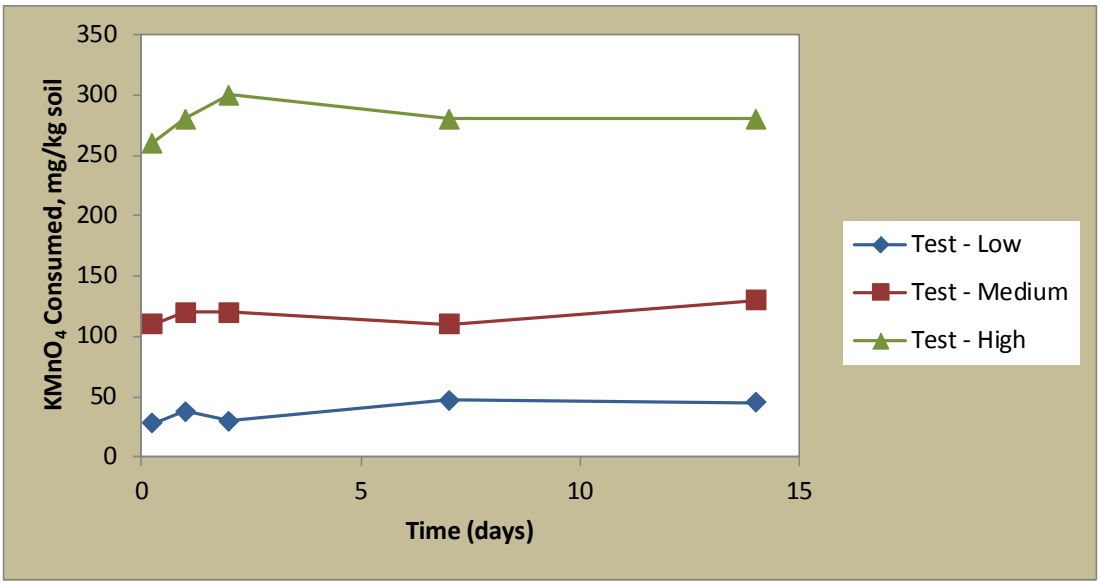


Figure 4. $KMnO_4$ SOD.

Table 7. COC Removal Results – COC Concentrations.

Analyte	Units	Test														
		Time 0	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
			7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Primary COCs																
1,4-dioxane	µg/L	1,000	820	880	590	300	< 0.50	< 0.50	220	440	38	7.2	870	820	820	570
vinyl chloride	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/L	410	400	390	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-dichloroethene	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
trichloroethene	µg/L	7,200	9,500	7,300	6,100	2,900	52	< 1.0	6,800	6000	< 2.0	12	< 1.0	< 1.0	< 1.0	< 1.0
tetrachloroethene	µg/L	< 100	< 50	< 100	< 40	< 40	1.1	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
Other VOCs																
Acetone	µg/L	< 2,000	< 1,000	< 2,000	< 800	< 800	23	20	< 1,000	< 1,600	45	< 100	< 20	< 20	18	< 20
1,1-dichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	3.1	< 5.0	3.5	3.1	3.9	3.0
1,2-dichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	2.2	< 5.0	2.4	1.9	2.4	1.7
Chloromethane	µg/L	< 400	< 200	< 400	< 160	< 160	< 4.0	< 4.0	< 200	< 320	< 8.0	35	< 4.0	< 4.0	< 4.0	< 4.0
Dichloromethane	µg/L	< 400	< 200	< 400	< 160	< 160	< 4.0	< 4.0	< 200	< 320	< 8.0	820	< 4.0	< 4.0	< 4.0	< 4.0
Chloroform	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	16	250	3.0	2.5	3.5	2.3
Bromodichloromethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	40	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	2.2	9.7	2.8	2.0	2.6	1.8

Table 8. COC Removal Results – Mass Balance.

Analyte	Test													
	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Percent Remaining (Relative to Time 0)														
1,4-dioxane	82	88	59	30	< 0.05	< 0.05	22	44	4	1	87	82	82	57
1,1-dichloroethene	98	95	< 10	< 10	< 0.2	< 0.2	< 12	< 20	< 0.5	< 1.2	< 0.2	< 0.2	< 0.2	< 0.2
trichloroethene	132	101	85	40	0.7	< 0.01	94	83	< 0.03	0	< 0.01	< 0.01	< 0.01	< 0.01
Percent Destroyed (Relative to Time 0)														
1,4-dioxane	18	12	41	70	> 99.95	> 99.95	78	56	96	99	13	18	18	43
1,1-dichloroethene	2.4	4.9	> 90	> 90	> 99.8	> 99.8	> 88	> 80	> 99.5	> 98	> 99.8	> 99.8	> 99.8	> 99.8
trichloroethene	-32	-1	15	60	99	> 99.99	5.6	17	> 99.97	99.8	> 99.99	> 99.99	> 99.99	> 99.99

groundwater but masked due to high concentrations of TCE. Concentrations were notably higher in the AP-Fe test, with chloroform present at 250 μg/L and dichloromethane present at 820 μg/L. It is likely that these compounds are reactive intermediates (formation of trihalomethanes by activated persulfate is known to occur) and that concentrations would have declined given a longer reaction time since SP was still present at 28 days (see **Section 3.4**).

3.4 Secondary Parameters

The effect of each oxidant on selected secondary water quality parameters is shown in **Table 9**. Chloride concentration did not change appreciably, ranging 640 mg/L and 680 mg/L. The variation was too great to confirm complete dechlorination of TCE, which would have increased the concentration of chloride by approximately 6 mg/L. ORP was elevated in the AP-Fe and $KMnO_4$ tests as expected due to the presence of oxidant. It was not elevated in the AP-pH tests despite the presence of SP due to matrix interference (high pH can bias ORP measurement low). The pH behaved as expected. It was elevated (above pH 11) in the AP-pH tests and unaffected in the low dose AP-Fe tests and the $KMnO_4$ tests. pH decreased to 2.2 by Day 28 in the AP-Fe high dose test due to decomposition of SP. None of the oxidants were significantly consumed over the course of the study with the exception of SP in the high dose AP-Fe test. By Day 28, over 90% of SP was still present in the AP-pH and low dose AP-Fe tests and over 87% of $KMnO_4$ was still present. In the high dose AP-Fe test, 40% of the SP was still present. Sulfate increased in the activated persulfate tests. The increase was small in most cases with sulfate increasing from 200 mg/L at Time 0 to up to 530 mg/L in the AP-pH tests and up to 340 mg/L in the low dose AP-Fe test. Sulfate increased to 4,300 mg/L in the high dose AP-Fe test. The increases were due to decomposition of SP.

3.5 Long-Term Soil Buffering

Buffering curves for acid and base ranges are presented in **Figures 5** and **6**, respectively. Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil neutralized 1 mmol H^+/kg soil, increasing the pH from 2.8 at Time 0 to 8.4 within 6 days, but when 10 mmol H^+/kg soil was added to soil, the pH rose from 2.1 at Time 0 to 5.0 by Day 13. For reference, 10 mmoles H^+ is the amount of acid that can be generated by decomposition of 1.2 g SP since SP decomposes to generate 2 moles H^+/mole SP = 8.4

mmoles H^+/g SP). In tests using base, soil reduced the pH from 11.9 to 10.2 within 2 days when exposed to 10 mmol OH^-/kg soil, but only reduced the pH from 13 to 12.6 within 12 days when exposed to 100 mmol OH^-/kg soil. Since alkaline activation of persulfate requires pH above about 11, more than 10 mmol OH-/kg soil must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Table 9. COC Removal Results - Secondary Parameters.

Analyte	Units	Test														
		Time 0	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
			7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Chloride	mg/L	670	640	650	650	670	650	680	650	660	650	660	650	650	660	670
Dissolved Metals																
Iron	mg/L	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	150	140	140	110	< 0.60	< 0.60	< 0.6	< 0.60
Manganese	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.10	< 0.01	0.019	0.02	0.3	0.036	3.1	71	71	280	290
ORP	mV	76	215	186	72	30	42	132	190	252	305	624	616	565	632	595
pH	--	7.3	7.3	7.3	11.5	11.5	12.6	12.7	7.1	6.9	6.3	2.2	7.2	7.2	7.2	7.2
Residual Permanganate	mg/L KMnO4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	218	212	950	950
Residual Persulfate	g/L SP	n.a.	n.a.	n.a.	0.9	1.0	9.5	9.5	0.9	0.9	8.6	4.0	n.a.	n.a.	n.a.	n.a.
Sulfate	mg/L	200	220	300	240	360	380	530	300	340	680	4,300	n.m.	n.m.	n.m.	n.m.

n.a. = not applicable

n.m. = not measured

Time (days)	0	0.01	1	2	3	5	6	12	13
None (DI Control)	-	9.1	9.0	8.9		9.0		8.8	
100 mmol H+/kg soil (pH 1)	1.4	1.3	1.6	1.9	1.8		2.1		2.3
10 mmol H+/kg soil (pH 2)	2.1	3.0	4.1	4.5	4.5		4.6		5.0
1 mmol H+/kg soil (pH 3)	2.8	7.0	8.5	8.5	8.3		8.4		

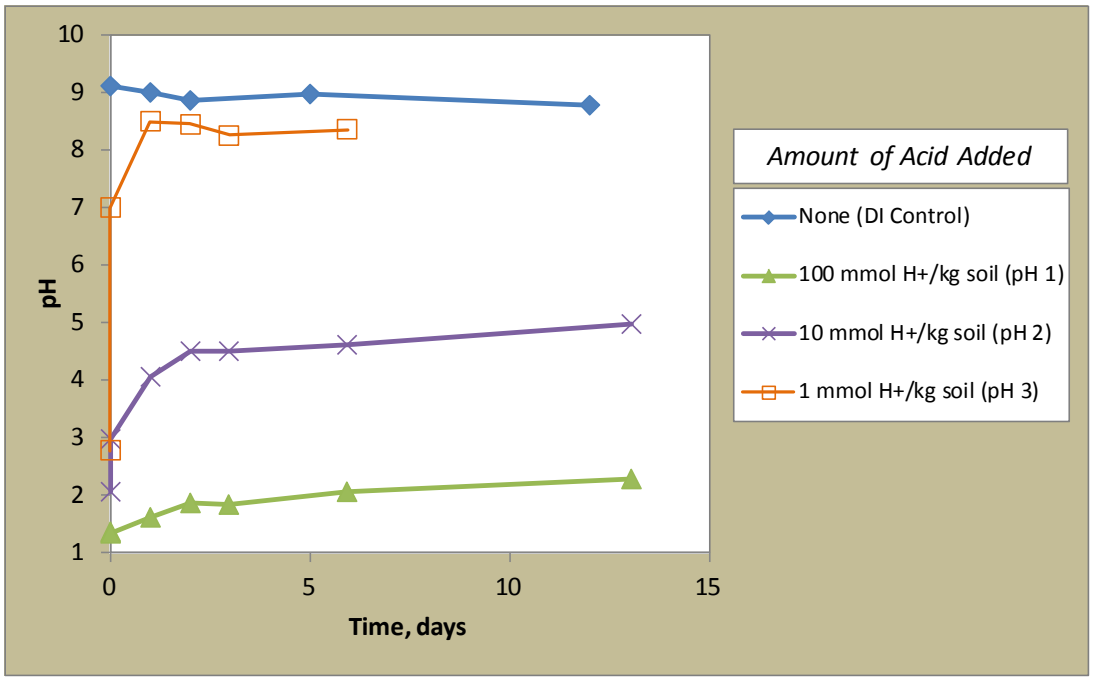


Figure 5. Buffering Curves – Acid Range.

Time (days)	0	0.01	1	2	5	12
None (DI Control)		9.1	9.0	8.9	9.0	8.8
100 mmol OH-/kg soil (pH 13)	13.0	12.5	12.6	12.4	12.6	12.6
10 mmol OH-/kg soil (pH 12)	11.9	10.9	10.5	10.2	10.1	10.2
1 mmol OH-/kg soil (pH 11)	10.6	9.6	9.4	9.2	9.3	9.2

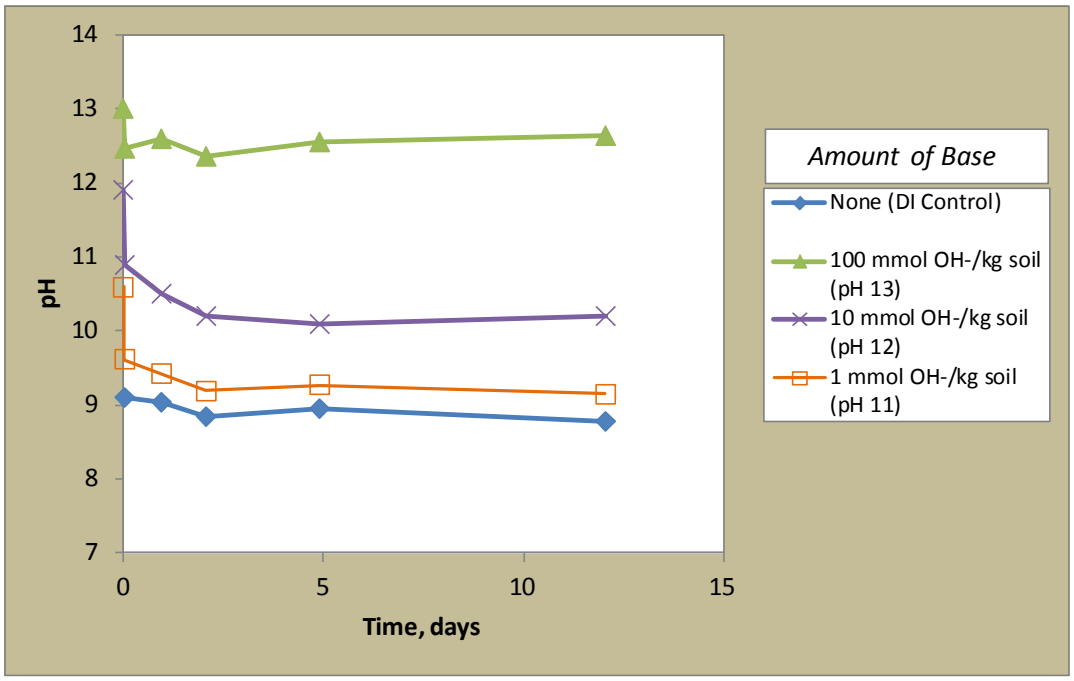


Figure 6. Buffering Curves – Base Range.

4.0 SUMMARY and CONCLUSIONS

Laboratory testing demonstrated that both AP-pH, AP-Fe, and $KMnO_4$ can destroy 1,4-dioxane and TCE, but the efficacy varied with oxidant and/or oxidant concentration. Low dose (1 g/L SP) AP-pH and AP-Fe tests destroyed 56-70% of 1,4-dioxane within 28 days and 17-60% TCE. In contrast, high dose tests (10 g/L SP), destroyed over 99% of 1,4-dioxane and TCE within 7 days. For $KMnO_4$, TCE was not detected in any sample, while 18% of 1,4-dioxane was destroyed within 28 days in the low dose (0.25 g/L $KMnO_4$) test and 43% was destroyed in the high dose test (1 g/L $KMnO_4$). In all tests, oxidant was still present at 28 days, indicating that additional treatment would likely occur given a longer contact time.

Several non-target VOCs, including trihalomethanes and 1,1,2-trichloroethane, were detected in the high dose AP-Fe and both of the $KMnO_4$ tests, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 μg/L and were most likely present in untreated groundwater, but masked by high concentrations of non-target VOCs. Concentrations of some compounds were notably higher (up to 820 μg/L) in the AP-Fe tests. Such compounds are reactive intermediates and are expected to be destroyed given longer reaction times.

Treatment with AP-pH increased the pH to above 11, but the pH should return to near-pretreatment conditions once SP is consumed. Treatment with the high dose AP-Fe decreased pH to 2.2. Treatment with $KMnO_4$ did not affect pH.

Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil buffered between 1 and 10 mmol H^+/kg soil, implying that it can neutralize the acid generated by decomposition of less than 1.2 g SP/kg soil. Soil also buffered between 10 and 100 mmol OH-/kg soil, indicating that more than 10 mmol OH-/kg soil (1.3 mL of 25% NaOH/kg soil) must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Based on the results of this study, PRIMA recommends that AP-pH or $KMnO_4$ be considered for use at this site. Both reacted with all COCs, though treatment of 1,4-

dioxane will likely be faster using AP-pH. PRIMA suggests not using AP-Fe because this oxidant could potentially significantly reduce groundwater pH.

APPENDIX A
(Chain of Custody)

APPENDIX B
(Analytical Reports)

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

June 07, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: H&A-Chandler

Order No.: PES1706003

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

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#: **PES1706003**
Report Date: **6/7/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 12:30:00 PM
Project: H&A-Chandler
Lab ID: 1706003-01
Matrix: AQUEOUS
Client Sample ID HA-Ch-GW

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloromethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
Vinyl chloride	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Bromomethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Acetone	ND	1600		µg/L	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethene	690	80		µg/L	6/2/2017	VOCs by EPA 8260
Dichloromethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chloroform	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Benzene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Trichloroethene	12000	80		µg/L	6/2/2017	VOCs by EPA 8260
Bromodichloromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Toluene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
Dibromochloromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Tetrachloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Ethylbenzene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
m,p-Xylene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
Bromoform	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
o-Xylene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: Toluene-d8	103	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	6/2/2017	VOCs by EPA 8260

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1706003**
Report Date: **6/7/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 3:30:00 PM
Project: H&A-Chandler
Lab ID: 1706003-02
Matrix: SOIL
Client Sample ID HA-Ch-SO

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloromethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
Vinyl chloride	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromomethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Acetone	ND	200		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Dichloromethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chloroform	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Benzene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Trichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromodichloromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Toluene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
Dibromochloromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Tetrachloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Ethylbenzene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
m,p-Xylene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromoform	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
o-Xylene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	98	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: Toluene-d8	103	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	6/2/2017	VOCs by EPA 8260

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QC SUMMARY REPORT

WO#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **MB-1372** SampType: **MBLK** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/1/2017** RunNo: **888**
Client ID: **PBS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/1/2017** SeqNo: **22197**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	40									
Vinyl chloride	ND	20									
Chloroethane	ND	20									
Bromomethane	ND	40									
Trichlorofluoromethane	ND	20									
Acetone	ND	200									
1,1-Dichloroethene	ND	20									
Dichloromethane	ND	40									
trans-1,2-Dichloroethene	ND	20									
1,1-Dichloroethane	ND	20									
cis-1,2-Dichloroethene	ND	20									
Chloroform	ND	20									
1,2-Dichloroethane	ND	20									
1,1,1-Trichloroethane	ND	20									
Carbon tetrachloride	ND	20									
Benzene	ND	5									
1,2-Dichloropropane	ND	20									
Trichloroethene	ND	20									
Bromodichloromethane	ND	20									
cis-1,3-Dichloropropene	ND	20									
trans-1,3-Dichloropropene	ND	20									
1,1,2-Trichloroethane	ND	20									
Toluene	ND	5									

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **MB-1372** SampType: **MBLK** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/1/2017** RunNo: **888**
Client ID: **PBS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/1/2017** SeqNo: **22197**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	20									
Tetrachloroethene	ND	20									
Chlorobenzene	ND	20									
Ethylbenzene	ND	5									
m,p-Xylene	ND	5									
Bromoform	ND	20									
o-Xylene	ND	5									
1,1,2,2-Tetrachloroethane	ND	20									
1,3-Dichlorobenzene	ND	20									
1,4-Dichlorobenzene	ND	20									
1,2-Dichlorobenzene	ND	20									
Surr: 1,2-Dichloroethane-d4	190		200		96.8	69.51	130.49				
Surr: Toluene-d8	200		200		101	69.51	130.49				
Surr: 4-Bromofluorobenzene	190		200		92.6	69.51	130.49				

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	407	80	400	0	102	13.51	175.49	427	4.6	38	
Vinyl chloride	398	40	400	0	99.6	36.51	161.49	402	0.9	35	

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	61.1	40	400	0	15.3	9.51	130.49	59.5	2.7	40	
Bromomethane	177	80	400	0	44.3	9.51	130.49	160	10	39	
Trichlorofluoromethane	124	40	400	0	31.0	9.51	130.49	114	8.3	40	
Acetone	7910	400	8000	0	98.9	9.51	186.49	7210	9.3	40	
1,1-Dichloroethene	284	40	400	0	70.9	9.51	131.49	362	24	40	
Dichloromethane	369	80	400	0	92.1	61.51	138.49	375	1.8	38	
trans-1,2-Dichloroethene	414	40	400	0	104	69.51	148.49	378	9.2	29	
1,1-Dichloroethane	406	40	400	0	101	66.51	141.49	370	9.2	29	
cis-1,2-Dichloroethene	394	40	400	0	98.5	69.51	142.49	361	8.8	29	
Chloroform	405	40	400	0	101	64.51	136.49	367	9.7	27	
1,2-Dichloroethane	368	40	400	0	91.9	60.51	142.49	329	11	28	
1,1,1-Trichloroethane	386	40	400	0	96.4	60.51	152.49	347	10	30	
Carbon tetrachloride	373	40	400	0	93.1	49.51	146.49	340	9.1	32	
Benzene	385	10	400	0	96.3	69.51	137.49	353	8.7	30	
1,2-Dichloropropane	377	40	400	0	94.2	67.51	142.49	346	8.5	27	
Trichloroethene	398	40	400	0	99.6	69.51	149.49	350	13	29	
Bromodichloromethane	366	40	400	0	91.5	61.51	138.49	326	12	28	
cis-1,3-Dichloropropene	389	40	400	0	97.3	60.51	141.49	347	11	28	
trans-1,3-Dichloropropene	387	40	400	0	96.8	54.51	143.49	343	12	27	
1,1,2-Trichloroethane	379	40	400	0	94.8	66.51	137.49	347	8.8	40	
Toluene	385	10	400	0	96.2	69.51	139.49	339	13	28	
Dibromochloromethane	366	40	400	0	91.6	57.51	134.49	321	13	31	
Tetrachloroethene	415	40	400	0	104	69.51	159.49	360	14	36	

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	404	40	400	0	101	69.51	137.49	361	11	40	
Ethylbenzene	394	10	400	0	98.5	69.51	137.49	353	11	37	
m,p-Xylene	404	10	400	0	101	69.51	145.49	353	13	34	
Bromoform	372	40	400	0	92.9	47.51	135.49	333	11	32	
o-Xylene	407	10	400	0	102	69.51	145.49	361	12	40	
1,1,2,2-Tetrachloroethane	354	40	400	0	88.6	55.51	136.49	330	7.1	40	
1,3-Dichlorobenzene	373	40	400	0	93.3	69.51	141.49	338	9.8	28	
1,4-Dichlorobenzene	379	40	400	0	94.8	69.51	138.49	344	9.9	28	
1,2-Dichlorobenzene	363	40	400	0	90.8	69.51	130.49	328	10	29	
Surr: 1,2-Dichloroethane-d4	396		400		99.0	69.51	130.49	398		0	
Surr: Toluene-d8	395		400		98.6	69.51	130.49	393		0	
Surr: 4-Bromofluorobenzene	371		400		92.6	69.51	130.49	360		0	

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	427	80	400	0	107	13.51	175.49				
Vinyl chloride	402	40	400	0	100	36.51	161.49				
Chloroethane	59.5	40	400	0	14.9	9.51	130.49				
Bromomethane	160	80	400	0	40.0	9.51	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	114	40	400	0	28.6	9.51	130.49				
Acetone	7210	400	8000	0	90.1	9.51	186.49				
1,1-Dichloroethene	362	40	400	0	90.4	9.51	131.49				
Dichloromethane	375	80	400	0	93.8	61.51	138.49				
trans-1,2-Dichloroethene	378	40	400	0	94.5	69.51	148.49				
1,1-Dichloroethane	370	40	400	0	92.5	66.51	141.49				
cis-1,2-Dichloroethene	361	40	400	0	90.1	69.51	142.49				
Chloroform	367	40	400	0	91.8	64.51	136.49				
1,2-Dichloroethane	329	40	400	0	82.2	60.51	142.49				
1,1,1-Trichloroethane	347	40	400	0	86.9	60.51	152.49				
Carbon tetrachloride	340	40	400	0	85.0	49.51	146.49				
Benzene	353	10	400	0	88.3	69.51	137.49				
1,2-Dichloropropane	346	40	400	0	86.5	67.51	142.49				
Trichloroethene	350	40	400	0	87.6	69.51	149.49				
Bromodichloromethane	326	40	400	0	81.4	61.51	138.49				
cis-1,3-Dichloropropene	347	40	400	0	86.8	60.51	141.49				
trans-1,3-Dichloropropene	343	40	400	0	85.7	54.51	143.49				
1,1,2-Trichloroethane	347	40	400	0	86.8	66.51	137.49				
Toluene	339	10	400	0	84.8	69.51	139.49				
Dibromochloromethane	321	40	400	0	80.2	57.51	134.49				
Tetrachloroethene	360	40	400	0	90.0	69.51	159.49				
Chlorobenzene	361	40	400	0	90.4	69.51	137.49				
Ethylbenzene	353	10	400	0	88.3	69.51	137.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	353	10	400	0	88.3	69.51	145.49				
Bromoform	333	40	400	0	83.3	47.51	135.49				
o-Xylene	361	10	400	0	90.3	69.51	145.49				
1,1,2,2-Tetrachloroethane	330	40	400	0	82.5	55.51	136.49				
1,3-Dichlorobenzene	338	40	400	0	84.6	69.51	141.49				
1,4-Dichlorobenzene	344	40	400	0	85.9	69.51	138.49				
1,2-Dichlorobenzene	328	40	400	0	82.1	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	398		400		99.5	69.51	130.49				
Surr: Toluene-d8	393		400		98.4	69.51	130.49				
Surr: 4-Bromofluorobenzene	360		400		90.1	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **MB-1389** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **PBW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22229**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.5									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.5									

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **MB-1389** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **PBW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22229**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	0.5									
Bromoform	ND	1									
o-Xylene	ND	0.5									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.4		10		94.3	69.51	130.49				
Surr: Toluene-d8	10		10		103	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.8		10		98.1	69.51	130.49				

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	10	2	10	0	100	39.51	145.49				
Vinyl chloride	9.68	1	10	0	96.8	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	12.3	1	10	0	124	37.51	156.49				
Bromomethane	10.4	2	10	0	104	13.51	162.49				
Trichlorofluoromethane	9.45	1	10	0	94.5	45.51	154.49				
Acetone	193	10	200	0	96.7	21.51	188.49				
1,1-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
Dichloromethane	10.8	2	10	0	108	68.51	130.49				
trans-1,2-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
1,1-Dichloroethane	8.39	1	10	0	83.9	69.51	130.49				
cis-1,2-Dichloroethene	9.28	1	10	0	92.8	69.51	130.49				
Chloroform	10	1	10	0	100	69.51	130.49				
1,2-Dichloroethane	9.11	1	10	0	91.1	69.51	133.49				
1,1,1-Trichloroethane	9.26	1	10	0	92.6	69.51	135.49				
Carbon tetrachloride	9.32	1	10	0	93.2	62.51	143.49				
Benzene	9.29	0.5	10	0	92.9	69.51	130.49				
1,2-Dichloropropane	9.05	1	10	0	90.5	69.51	130.49				
Trichloroethene	9.24	1	10	0	92.4	67.51	138.49				
Bromodichloromethane	9.15	1	10	0	91.5	57.51	147.49				
cis-1,3-Dichloropropene	9.57	1	10	0	95.7	69.51	130.49				
trans-1,3-Dichloropropene	9.5	1	10	0	95.0	69.51	131.49				
1,1,2-Trichloroethane	9.01	1	10	0	90.1	69.51	130.49				
Toluene	8.9	0.5	10	0	89.0	69.51	130.49				
Dibromochloromethane	8.59	1	10	0	85.9	48.51	147.49				
Tetrachloroethene	9.39	1	10	0	93.9	69.51	130.49				

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QC SUMMARY REPORT

WO#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	9.64	1	10	0	96.4	69.51	130.49				
Ethylbenzene	9.21	0.5	10	0	92.1	69.51	130.49				
m,p-Xylene	9.28	0.5	10	0	92.8	64.51	139.49				
Bromoform	8.7	1	10	0	87.0	59.51	144.49				
o-Xylene	9.2	0.5	10	0	92.0	69.51	130.49				
1,1,2,2-Tetrachloroethane	8.33	1	10	0	83.3	69.51	130.49				
1,3-Dichlorobenzene	8.94	1	10	0	89.4	69.51	130.49				
1,4-Dichlorobenzene	8.97	1	10	0	89.7	69.51	130.49				
1,2-Dichlorobenzene	8.65	1	10	0	86.5	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	10.3		10		103	69.51	130.49				
Surr: Toluene-d8	9.69		10		96.9	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.16		10		91.6	69.51	130.49				

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	57.8	10	50	0	116	25.51	146.49	47.1	20	30	
Vinyl chloride	63.9	5	50	0	128	45.51	142.49	54.7	15	30	
Chloroethane	104	5	50	0	208	24.51	164.49	77.3	30	30	S
Bromomethane	68.8	10	50	0	138	9.51	172.49	60.8	12	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	74	5	50	0	148	31.51	164.49	65.3	13	30	
Acetone	1390	50	1000	0	139	9.51	188.49	1330	5.1	30	
1,1-Dichloroethene	68.8	5	50	0	138	61.51	133.49	61.7	11	30	S
Dichloromethane	71.6	10	50	0	143	68.51	130.49	66.8	7	30	S
trans-1,2-Dichloroethene	67.5	5	50	0	135	66.51	131.49	62.1	8.4	30	S
1,1-Dichloroethane	58.8	5	50	0	118	66.51	130.49	55.3	6.1	30	
cis-1,2-Dichloroethene	53.4	5	50	0	107	69.51	130.49	48.9	8.9	30	
Chloroform	57.1	5	50	0	114	68.51	130.49	53.1	7.3	30	
1,2-Dichloroethane	55	5	50	0	110	63.51	139.49	53	3.6	30	
1,1,1-Trichloroethane	52.6	5	50	0	105	64.51	139.49	49.7	5.8	30	
Carbon tetrachloride	52.8	5	50	0	106	55.51	146.49	48.7	8	30	
Benzene	53.4	2.5	50	0	107	66.51	134.49	50.3	6	30	
1,2-Dichloropropane	55.1	5	50	0	110	68.51	134.49	51.2	7.5	30	
Trichloroethene	53.2	5	50	0	106	67.51	138.49	49.3	7.6	30	
Bromodichloromethane	53.9	5	50	0	108	57.51	147.49	50.6	6.2	30	
cis-1,3-Dichloropropene	48.2	5	50	0	96.4	60.51	130.49	44.6	7.8	30	
trans-1,3-Dichloropropene	53.4	5	50	0	107	61.51	131.49	49.3	7.9	30	
1,1,2-Trichloroethane	55.1	5	50	0	110	69.51	131.49	52.3	5.1	30	
Toluene	51.3	2.5	50	0	103	37.51	130.49	48	6.5	30	
Dibromochloromethane	50.3	5	50	0	101	48.51	147.49	46.5	7.9	30	
Tetrachloroethene	54.3	5	50	0	109	62.51	134.49	51.8	4.9	30	
Chlorobenzene	56.2	5	50	0	112	69.51	130.49	53.1	5.7	30	
Ethylbenzene	54.6	2.5	50	0	109	69.51	130.49	50.5	7.8	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	55.7	2.5	50	0	111	64.51	139.49	51.6	7.5	30	
Bromoform	52.9	5	50	0	106	59.51	144.49	48.7	8.3	30	
o-Xylene	55.8	2.5	50	0	112	68.51	130.49	52.4	6.3	30	
1,1,2,2-Tetrachloroethane	52.3	5	50	0	105	66.51	134.49	48.8	6.8	30	
1,3-Dichlorobenzene	50.5	5	50	0	101	69.51	130.49	45.7	10	30	
1,4-Dichlorobenzene	51.2	5	50	0	102	69.51	130.49	47	8.6	30	
1,2-Dichlorobenzene	49.6	5	50	0	99.3	69.51	130.49	46.2	7.3	30	
Surr: 1,2-Dichloroethane-d4	54.1		50		108	69.51	130.49	53.9		0	
Surr: Toluene-d8	48		50		96.0	69.51	130.49	48.2		0	
Surr: 4-Bromofluorobenzene	43.8		50		87.6	69.51	130.49	43.1		0	

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	47.1	10	50	0	94.2	25.51	146.49				
Vinyl chloride	54.7	5	50	0	109	45.51	142.49				
Chloroethane	77.3	5	50	0	154	24.51	164.49				
Bromomethane	60.8	10	50	0	122	9.51	172.49				
Trichlorofluoromethane	65.3	5	50	0	131	31.51	164.49				
Acetone	1330	50	1000	0	133	9.51	188.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	61.7	5	50	0	123	61.51	133.49				
Dichloromethane	66.8	10	50	0	134	68.51	130.49				S
trans-1,2-Dichloroethene	62.1	5	50	0	124	66.51	131.49				
1,1-Dichloroethane	55.3	5	50	0	111	66.51	130.49				
cis-1,2-Dichloroethene	48.9	5	50	0	97.8	69.51	130.49				
Chloroform	53.1	5	50	0	106	68.51	130.49				
1,2-Dichloroethane	53	5	50	0	106	63.51	139.49				
1,1,1-Trichloroethane	49.7	5	50	0	99.3	64.51	139.49				
Carbon tetrachloride	48.7	5	50	0	97.4	55.51	146.49				
Benzene	50.3	2.5	50	0	101	66.51	134.49				
1,2-Dichloropropane	51.2	5	50	0	102	68.51	134.49				
Trichloroethene	49.3	5	50	0	98.6	67.51	138.49				
Bromodichloromethane	50.6	5	50	0	101	57.51	147.49				
cis-1,3-Dichloropropene	44.6	5	50	0	89.1	60.51	130.49				
trans-1,3-Dichloropropene	49.3	5	50	0	98.6	61.51	131.49				
1,1,2-Trichloroethane	52.3	5	50	0	105	69.51	131.49				
Toluene	48	2.5	50	0	96.0	37.51	130.49				
Dibromochloromethane	46.5	5	50	0	93.0	48.51	147.49				
Tetrachloroethene	51.8	5	50	0	104	62.51	134.49				
Chlorobenzene	53.1	5	50	0	106	69.51	130.49				
Ethylbenzene	50.5	2.5	50	0	101	69.51	130.49				
m,p-Xylene	51.6	2.5	50	0	103	64.51	139.49				
Bromoform	48.7	5	50	0	97.3	59.51	144.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	52.4	2.5	50	0	105	68.51	130.49				
1,1,2,2-Tetrachloroethane	48.8	5	50	0	97.7	66.51	134.49				
1,3-Dichlorobenzene	45.7	5	50	0	91.4	69.51	130.49				
1,4-Dichlorobenzene	47	5	50	0	94.0	69.51	130.49				
1,2-Dichlorobenzene	46.2	5	50	0	92.3	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	53.9		50		108	69.51	130.49				
Surr: Toluene-d8	48.2		50		96.4	69.51	130.49				
Surr: 4-Bromofluorobenzene	43.1		50		86.2	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#: **1706003**
Date: **6/5/2017**

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.

S54 = Surrogate recovery was below laboratory acceptance limits.

S55 = Surrogate recovery was above laboratory acceptance limits.

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

Definition Only

WO#: **1706003**

Date: **6/5/2017**

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

RUSH

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706003
Report Due By: 05-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: H&A-Chandler

Date Received: 01-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests VOC_S	VOC_W						Sample Remarks
PES1706003-01	HA-Ch-GW	AQ	5/31/2017 12:30:00 PM	3	0	2		A - 8260/ Acetone_Cs						
PES1706003-02	HA-Ch-SO	SO	5/31/2017 3:30:00 PM	1	0	2	A - 8260/ Acetone_Cs							

Comments: 48 HR TAT. Chain split into two separate work orders due to different TATs.

	Signature	Print Name	Company	Date/Time
Logged in by:	KMurray	KMurray	Alpha Analytical, Inc.	6/1/17 1035

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

CHAIN OF CUSTODY

2854

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: H&A-Chandler
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Alkalinity-310	Chloride-300	*Metals-6020							Remarks
1230	5/31/17	AQ	PES1706003-01	~~H&A~~ HA-ch-GW	48hr	3V		X	X										
1530	5/31/17	So	02	HA-ch-So	↓	1S		X	X										
1630	5/31/17	AQ	—	HA-ch-GW	STD	2P	X			X	X	X							
1530	5/31/17	So	—	HA-ch-So	STD	—		X				X							

ADDITIONAL INSTRUCTIONS:
*Metals = Cr, Fe, Mn

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 445.0636 (c) (2).

Sampled By: CR

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation)	Date:	Time:
Cathleen Ryan	5/31/17	1730	FED EX	—	—
			K Murray	6/1/17	1025

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

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

June 15, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: H&A-Chandler

Order No.: PES1706004

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

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#: **PES1706004**
Report Date: **6/15/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 12:30:00 PM
Project: H&A-Chandler
Lab ID: 1706004-01
Matrix: AQUEOUS
Client Sample ID HA-Ch-GW

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	680	50		mg/L	6/2/2017	Anions by EPA 300.0
Alkalinity, Total (As CaCO3 at pH 4.5)	420	20		mg/L	6/6/2017	Alkalinity by SM2320B
Chromium (Cr)	ND	0.020		mg/L	6/7/2017	Metals by EPA 200.8
Manganese (Mn)	1.3	0.010		mg/L	6/7/2017	Metals by EPA 200.8
Iron (Fe)	6.6	0.60		mg/L	6/7/2017	Metals by EPA 200.8

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#: **PES1706004**
Report Date: **6/15/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 3:30:00 PM
Project: H&A-Chandler
Lab ID: 1706004-02
Matrix: SOIL
Client Sample ID HA-Ch-SO

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chromium (Cr)	8.1	1.0		mg/Kg	6/13/2017	Metals by EPA 6020
Manganese (Mn)	170	1.0		mg/Kg	6/13/2017	Metals by EPA 6020
Iron (Fe)	8300	500		mg/Kg	6/13/2017	Metals by EPA 6020

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QC SUMMARY REPORT

WO#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **300_0_W**

Sample ID: **MB-1376** SampType: **MBLK** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **PBW** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID: **LCS-1376** SampType: **LCS** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **LCSW** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	51.2	0.5	50	0	102	89.51	110.49				

Sample ID: **1705312-01BMSD** SampType: **MSD** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **BatchQC** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21940**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	283	2.5	250	30.77	101	79.51	120.49	282	0.087	15	

Sample ID: **1705312-01BMS** SampType: **MS** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **BatchQC** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21939**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	282	2.5	250	30.77	101	79.51	120.49				

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

Alpha Analytical, Inc
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QC SUMMARY REPORT

WO#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **300_0_W**

Sample ID:	**1705312-01BMS**	SampType:	**MS**	TestCode:	**300_0_W**	Units:	**mg/L**	Prep Date:	**6/1/2017**	RunNo:	**898**
Client ID:	**BatchQC**	Batch ID:	**1376**	TestNo:	**E300.0**			Analysis Date:	**6/2/2017**	SeqNo:	**21939**

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#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **ALKALINITY_W**

Sample ID: **WC170517-01** SampType: **LCS** TestCode: **ALKALINITY_** Units: **mg/L** Prep Date: **6/6/2017** RunNo: **925**
Client ID: **LCSW** Batch ID: **W0606AL_A** TestNo: **Alkalinity** Analysis Date: **6/6/2017** SeqNo: **22620**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3 at pH 4.5)	219	10	250	0	87.8	79.51	120.49				

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#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **METALS_SO**

Sample ID: **MB-1433** SampType: **MBLK** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **PBS** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23317**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	1									
Manganese (Mn)	ND	1									
Iron (Fe)	ND	500									

Sample ID: **LCS-1433** SampType: **LCS** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **LCSS** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23319**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	28.5	1	25	0	114	79.51	120.49				
Manganese (Mn)	282	1	250	0	113	79.51	120.49				
Iron (Fe)	5320	500	5000	0	106	79.51	120.49				

Sample ID: **1706056-01AMSD** SampType: **MSD** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **BatchQC** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	38.9	1	25	13.35	102	74.51	125.49	42.2	8	20	
Manganese (Mn)	613	1	250	306.8	123	74.51	125.49	667	8.4	20	
Iron (Fe)	23700	500	5000	0	156	74.51	125.49	28800	20	20	S

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

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

WO#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **METALS_T_200_8**

Sample ID: **MB-1409** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **PBW** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	0.01									
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID: **LCS-1409** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **LCSW** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23280**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.268	0.02	0.25	0	107	84.51	115.49				
Manganese (Mn)	2.68	0.01	2.5	0	107	84.51	115.49				
Iron (Fe)	52.9	0.6	50	0	106	84.51	115.49				

Sample ID: **1705222-02AMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **BatchQC** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.3	0.02	0.25	0	113	69.51	130.49	0.282	6.3	20	
Manganese (Mn)	4.03	0.01	2.5	1.227	112	69.51	130.49	3.84	4.9	20	
Iron (Fe)	56.5	0.6	50	3.663	106	69.51	130.49	56.2	0.6	20	

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

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

QC SUMMARY REPORT

WO#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **METALS_T_200_8**

Sample ID: **1705222-02AMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **BatchQC** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23281**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.282	0.02	0.25	0	106	69.51	130.49				
Manganese (Mn)	3.84	0.01	2.5	1.227	104	69.51	130.49				
Iron (Fe)	56.2	0.6	50	3.663	105	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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TEL: (775) 355-1044 FAX: (775) 355-0406
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Definition Only

WO#: **1706004**

Date:

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.

Alpha Analytical, Inc
255 Glendale Ave, #21
Sparks, Nevada 89431
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Definition Only

WO#: **1706004**

Date:

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706004
Report Due By: 15-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: H&A-Chandler

Date Received: 01-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	ALKALINITY_W	METALS_SO	METALS_T_200_8				Sample Remarks
PES1706004-01	HA-Ch-GW	AQ	5/31/2017 12:30:00 PM	2	0	10	A - Cl	A - Alk		B - Cr, Fe, Mn				
PES1706004-02	HA-Ch-SO	SO	5/31/2017 3:30:00 PM	1	0	10			A - Cr, Fe, Mn					

Comments: Chain split into two separate work orders due to different TATs.

	Signature	Print Name	Company	Date/Time
Logged in by:	KMurray	K Murray	Alpha Analytical, Inc.	6/1/17 1050

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

CHAIN OF CUSTODY

2854

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
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Satellite Service Centers:
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Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: HSA-Chandlar
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Alkalinity-310	Chloride-300	Metals-6020							Remarks
1230	5/31/17	AQ	—	HA-ch-GW	48hr	3V		X	X										
1530	5/31/17	So	—	HA-ch-So	↓	1S		X	X										
1230	5/31/17	AQ	PES1706004-01	HA-ch-GW	STD	2P	X			X	X	X							
1530	5/31/17	So	02	HA-ch-So	STD	—		X				X							

ADDITIONAL INSTRUCTIONS:
*metals = Cr, Fe, Mn

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 445.0636 (c) (2).

Sampled By: CR

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation):	Date:	Time:
[signature]	5/31/17	1730	FED EX	—	—
			[signature]	6/1/17	1040

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

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

June 19, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: HA-Chand

Order No.: PES1706148

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

Roger Scholl

Roger Scholl
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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1706148**
Report Date: **6/19/2017**

CLIENT: Prima Environmental
Collection Date: 6/13/2017 6:10:00 PM
Project: HA-Chand
Lab ID: 1706148-01
Matrix: AQUEOUS
Client Sample ID HA-Chan-To

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	6/15/2017	Anions by EPA 300.0
Chromium (Cr)	ND	0.020		mg/L	6/16/2017	Metals by EPA 200.8
Manganese (Mn)	ND	0.010		mg/L	6/16/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	6/16/2017	Metals by EPA 200.8
Chloromethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
Vinyl chloride	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Bromomethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Acetone	ND	2,000		µg/L	6/16/2017	VOCs by EPA 8260
1,1-Dichloroethene	410	100		µg/L	6/16/2017	VOCs by EPA 8260
Dichloromethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chloroform	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Benzene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Trichloroethene	7200	100		µg/L	6/16/2017	VOCs by EPA 8260
Bromodichloromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Toluene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
Dibromochloromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Tetrachloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Ethylbenzene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
m,p-Xylene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
Bromoform	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
o-Xylene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	6/16/2017	VOCs by EPA 8260
Surr: Toluene-d8	101	70-130		%Rec	6/16/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	6/16/2017	VOCs by EPA 8260

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **300_0_W**

Sample ID	**MB-1494**	SampType: **MBLK**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**PBW**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID	**LCS-1494**	SampType: **LCS**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**LCSW**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.6	0.5	50	0	99.1	89.51	110.49				

Sample ID	**1706146-05BMSD**	SampType: **MSD**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**BatchQC**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25176**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	272	2.5	250	23.02	99.4	79.51	120.49	272	0.092	15	

Sample ID	**1706146-05BMS**	SampType: **MS**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**BatchQC**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25175**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	272	2.5	250	23.02	99.5	79.51	120.49				

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

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QC SUMMARY REPORT

WO#: **1706148**

19-Jun-17

Client: Prima Environmental
Project: HA-Chand

TestCode: **300_0_W**

Sample ID	**1706146-05BMS**	SampType:	**MS**	TestCode:	**300_0_W**	Units:	**mg/L**	Prep Date:	**6/15/2017**	RunNo:	**1030**		
Client ID:	**BatchQC**	Batch ID:	**1494**	TestNo:	**E300.0**			Analysis Date:	**6/15/2017**	SeqNo:	**25175**		

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 limit

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **METALS_T_200_8**

Sample ID **MB-1491** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **PBW** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25231**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	0.01									
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID **LCS-1491** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **LCSW** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.267	0.02	0.25	0	107	84.51	115.49				
Manganese (Mn)	2.66	0.01	2.5	0	106	84.51	115.49				
Iron (Fe)	55.6	0.6	50	0	111	84.51	115.49				

Sample ID **1706141-02DMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **BatchQC** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.267	0.02	0.25	0	107	69.51	130.49	0.232	14	20	
Manganese (Mn)	2.66	0.01	2.5	0	106	69.51	130.49	2.33	13	20	
Iron (Fe)	55.8	0.6	50	0	112	69.51	130.49	54	3.2	20	

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **METALS_T_200_8**

Sample ID **1706141-02DMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **BatchQC** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.232	0.02	0.25	0	93.0	69.51	130.49				
Manganese (Mn)	2.33	0.01	2.5	0	93.1	69.51	130.49				
Iron (Fe)	54	0.6	50	0	108	69.51	130.49				

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **MB-1500** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **PBW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.5									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.5									

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **MB-1500** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **PBW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	0.5									
Bromoform	ND	1									
o-Xylene	ND	0.5									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.1		10		90.7	69.51	130.49				
Surr: Toluene-d8	11		10		106	69.51	130.49				
Surr: 4-Bromofluorobenzene	12		10		116	69.51	130.49				

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	10.3	2	10	0	104	39.51	145.49				
Vinyl chloride	8.37	1	10	0	83.7	69.51	130.49				

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	10.8	1	10	0	108	37.51	156.49				
Bromomethane	8.71	2	10	0	87.1	13.51	162.49				
Trichlorofluoromethane	10.6	1	10	0	106	45.51	154.49				
Acetone	233	10	200	0	116	21.51	188.49				
1,1-Dichloroethene	8.76	1	10	0	87.6	69.51	130.49				
Dichloromethane	9.29	2	10	0	92.9	68.51	130.49				
trans-1,2-Dichloroethene	9.64	1	10	0	96.4	69.51	130.49				
1,1-Dichloroethane	9.77	1	10	0	97.7	69.51	130.49				
cis-1,2-Dichloroethene	8.79	1	10	0	87.9	69.51	130.49				
Chloroform	9.35	1	10	0	93.5	69.51	130.49				
1,2-Dichloroethane	10.3	1	10	0	104	69.51	133.49				
1,1,1-Trichloroethane	10.4	1	10	0	104	69.51	135.49				
Carbon tetrachloride	9.54	1	10	0	95.4	62.51	143.49				
Benzene	9.8	0.5	10	0	98.0	69.51	130.49				
1,2-Dichloropropane	10.3	1	10	0	103	69.51	130.49				
Trichloroethene	8.63	1	10	0	86.3	67.51	138.49				
Bromodichloromethane	9.06	1	10	0	90.6	57.51	147.49				
cis-1,3-Dichloropropene	8.94	1	10	0	89.4	69.51	130.49				
trans-1,3-Dichloropropene	9.19	1	10	0	91.9	69.51	131.49				
1,1,2-Trichloroethane	9.52	1	10	0	95.2	69.51	130.49				
Toluene	9.59	0.5	10	0	95.9	69.51	130.49				
Dibromochloromethane	9.58	1	10	0	95.8	48.51	147.49				
Tetrachloroethene	8.81	1	10	0	88.1	69.51	130.49				

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	9.17	1	10	0	91.7	69.51	130.49				
Ethylbenzene	10.2	0.5	10	0	102	69.51	130.49				
m,p-Xylene	9.65	0.5	10	0	96.5	64.51	139.49				
Bromoform	9.45	1	10	0	94.5	59.51	144.49				
o-Xylene	8.43	0.5	10	0	84.3	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.31	1	10	0	93.1	69.51	130.49				
1,3-Dichlorobenzene	9.74	1	10	0	97.4	69.51	130.49				
1,4-Dichlorobenzene	9.74	1	10	0	97.4	69.51	130.49				
1,2-Dichlorobenzene	9.4	1	10	0	94.0	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	10.7		10		106	69.51	130.49				
Surr: Toluene-d8	9.93		10		99.3	69.51	130.49				
Surr: 4-Bromofluorobenzene	10.1		10		101	69.51	130.49				

Sample ID **1706146-05AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	52.4	10	50	0	105	25.51	146.49	49.7	5.2	30	
Vinyl chloride	40.9	5	50	0	81.7	45.51	142.49	39	4.5	30	
Chloroethane	55.1	5	50	0	110	24.51	164.49	56.1	1.8	30	
Bromomethane	48.6	10	50	0	97.2	9.51	172.49	35.5	31	30	R

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	51	5	50	0	102	31.51	164.49	51	0.078	30	
Acetone	953	50	1000	0	95.3	9.51	188.49	913	4.3	30	
1,1-Dichloroethene	41.7	5	50	0	83.5	61.51	133.49	40.3	3.4	30	
Dichloromethane	45	10	50	0	89.9	68.51	130.49	43.8	2.6	30	
trans-1,2-Dichloroethene	45.6	5	50	0	91.2	66.51	131.49	43.8	4.1	30	
1,1-Dichloroethane	48.2	5	50	0	96.4	66.51	130.49	47.2	2.1	30	
cis-1,2-Dichloroethene	42.2	5	50	0	84.3	69.51	130.49	40.9	3	30	
Chloroform	47	5	50	0	93.9	68.51	130.49	45.6	2.9	30	
1,2-Dichloroethane	53.3	5	50	0	107	63.51	139.49	52.1	2.3	30	
1,1,1-Trichloroethane	51.1	5	50	0	102	64.51	139.49	50.8	0.63	30	
Carbon tetrachloride	46.8	5	50	0	93.7	55.51	146.49	46.7	0.26	30	
Benzene	47.1	2.5	50	0	94.2	66.51	134.49	46.4	1.5	30	
1,2-Dichloropropane	52	5	50	0	104	68.51	134.49	51.6	0.71	30	
Trichloroethene	40.9	5	50	0	81.9	67.51	138.49	40	2.4	30	
Bromodichloromethane	45.5	5	50	0	91.0	57.51	147.49	44.7	1.8	30	
cis-1,3-Dichloropropene	39.6	5	50	0	79.2	60.51	130.49	38.5	2.8	30	
trans-1,3-Dichloropropene	41.7	5	50	0	83.3	61.51	131.49	40.1	3.7	30	
1,1,2-Trichloroethane	45	5	50	0	90.0	69.51	131.49	44	2.2	30	
Toluene	46.1	2.5	50	0	92.2	37.51	130.49	45.3	1.8	30	
Dibromochloromethane	45	5	50	0	90.0	48.51	147.49	44	2.3	30	
Tetrachloroethene	60.8	5	50	0	82.1	62.51	134.49	59.7	1.8	30	
Chlorobenzene	42.8	5	50	0	85.5	69.51	130.49	42.3	1.2	30	
Ethylbenzene	47.4	2.5	50	0	94.8	69.51	130.49	46.8	1.4	30	

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

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

QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **1706146-05AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	44.7	2.5	50	0	89.3	64.51	139.49	44.2	1.1	30	
Bromoform	44.6	5	50	0	89.3	59.51	144.49	42.8	4.1	30	
o-Xylene	39.6	2.5	50	0	79.2	68.51	130.49	39.4	0.63	30	
1,1,2,2-Tetrachloroethane	44.6	5	50	0	89.3	66.51	134.49	43.2	3.3	30	
1,3-Dichlorobenzene	46.2	5	50	0	92.5	69.51	130.49	45.9	0.74	30	
1,4-Dichlorobenzene	46.2	5	50	0	92.5	69.51	130.49	45.4	1.8	30	
1,2-Dichlorobenzene	45.2	5	50	0	90.4	69.51	130.49	44.2	2.3	30	
Surr: 1,2-Dichloroethane-d4	56.2		50		112	69.51	130.49	56.3		0	
Surr: Toluene-d8	48.9		50		97.8	69.51	130.49	48.4		0	
Surr: 4-Bromofluorobenzene	49.5		50		99.0	69.51	130.49	49.9		0	

Sample ID **1706146-05AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	49.7	10	50	0	99.5	25.51	146.49				
Vinyl chloride	39	5	50	0	78.1	45.51	142.49				
Chloroethane	56.1	5	50	0	112	24.51	164.49				
Bromomethane	35.5	10	50	0	71.0	9.51	172.49				
Trichlorofluoromethane	51	5	50	0	102	31.51	164.49				
Acetone	913	50	1000	0	91.3	9.51	188.49				

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

Alpha Analytical, Inc
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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	40.3	5	50	0	80.7	61.51	133.49				
Dichloromethane	43.8	10	50	0	87.6	68.51	130.49				
trans-1,2-Dichloroethene	43.8	5	50	0	87.6	66.51	131.49				
1,1-Dichloroethane	47.2	5	50	0	94.4	66.51	130.49				
cis-1,2-Dichloroethene	40.9	5	50	0	81.9	69.51	130.49				
Chloroform	45.6	5	50	0	91.2	68.51	130.49				
1,2-Dichloroethane	52.1	5	50	0	104	63.51	139.49				
1,1,1-Trichloroethane	50.8	5	50	0	102	64.51	139.49				
Carbon tetrachloride	46.7	5	50	0	93.5	55.51	146.49				
Benzene	46.4	2.5	50	0	92.8	66.51	134.49				
1,2-Dichloropropane	51.6	5	50	0	103	68.51	134.49				
Trichloroethene	40	5	50	0	79.9	67.51	138.49				
Bromodichloromethane	44.7	5	50	0	89.4	57.51	147.49				
cis-1,3-Dichloropropene	38.5	5	50	0	77.1	60.51	130.49				
trans-1,3-Dichloropropene	40.1	5	50	0	80.3	61.51	131.49				
1,1,2-Trichloroethane	44	5	50	0	88.0	69.51	131.49				
Toluene	45.3	2.5	50	0	90.6	37.51	130.49				
Dibromochloromethane	44	5	50	0	87.9	48.51	147.49				
Tetrachloroethene	59.7	5	50	0	79.9	62.51	134.49				
Chlorobenzene	42.3	5	50	0	84.5	69.51	130.49				
Ethylbenzene	46.8	2.5	50	0	93.5	69.51	130.49				
m,p-Xylene	44.2	2.5	50	0	88.4	64.51	139.49				
Bromoform	42.8	5	50	0	85.7	59.51	144.49				

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	39.4	2.5	50	0	78.7	68.51	130.49				
1,1,2,2-Tetrachloroethane	43.2	5	50	0	86.4	66.51	134.49				
1,3-Dichlorobenzene	45.9	5	50	0	91.8	69.51	130.49				
1,4-Dichlorobenzene	45.4	5	50	0	90.8	69.51	130.49				
1,2-Dichlorobenzene	44.2	5	50	0	88.4	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	56.3		50		113	69.51	130.49				
Surr: Toluene-d8	48.4		50		96.7	69.51	130.49				
Surr: 4-Bromofluorobenzene	49.9		50		99.8	69.51	130.49				

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

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Definition Only

WO#: **1706148**

Date:

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.

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706148
Report Due By: 29-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: HA-Chand

Date Received: 15-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	METALS_T_200_8	VOC_W					Sample Remarks
PES1706148-01	HA-Chan-To	AQ	6/13/2017 6:10:00 PM	5	0	10	B - Cl	C - Cr,Fe,Mn	A - 8260_Cs					

Comments:

	Signature	Print Name	Company	Date/Time
Logged in by:	Elisaibet Hernandez	Elisaibet Hernandez	Alpha Analytical, Inc.	06/15/17 11:42

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

CHAIN OF CUSTODY

2858

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044
Fax: 775-355-0406

Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Page # 1 of 1

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: HA-Chand
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Chloride	Metals (Cr, Fe, Mn)								Remarks
1810	6/13/17	AQ	PES1706148-01	HA-Chan-TØ	STD	3V, 2P	X	X	X	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 445.0636 (c) (2).

Sampled By: CL

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature] / PRIMA	6/14/17	1530	FED EX		—
			Elizabet Hernandez	06/15/17	11:42

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

07/16

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

July 28, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: HA Chan

Order No.: PES1707079

Dear Cindy Schreier:

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,

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-01
Matrix: AQUEOUS
Client Sample ID HA Chan Con-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	650	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	ND	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
Vinyl chloride	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Bromomethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Acetone	ND	2,000		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethene	390	100		µg/L	7/18/2017	VOCs by EPA 8260B
Dichloromethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroform	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Benzene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Trichloroethene	7,300	100		µg/L	7/18/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Toluene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Ethylbenzene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
m,p-Xylene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
Bromoform	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
o-Xylene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	92	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: Toluene-d8	110	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	7/18/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-02
Matrix: AQUEOUS
Client Sample ID HA Chan AP-pH LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	ND	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	800		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	2,900	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	102	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-03
Matrix: AQUEOUS
Client Sample ID HA Chan AP-pH HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	680	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	0.019	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	20	10		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	102	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	99	70-130		%Rec	7/17/2017	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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-04
Matrix: AQUEOUS
Client Sample ID HA Chan AP-Fe-LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	660	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	0.30	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	140	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	1,600		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	6,000	80		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	120	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	103	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-05
Matrix: AQUEOUS
Client Sample ID HA Chan AP-Fe-HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	660	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	3.1	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	110	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	35	20		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	100		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	820	20		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	250	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	12	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	40	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	9.7	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	76	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	97	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-06
Matrix: AQUEOUS
Client Sample ID HA Chan KMnO4 LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	650	500		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	71	0.10		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	3.1	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	2.5	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	1.9	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	2.0	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	106	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	89	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Some Reporting Limits were increased due to sample foaming.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-07
Matrix: AQUEOUS
Client Sample ID HA Chan KMnO4 HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	290	0.010		mg/L	7/26/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Bromomethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Acetone	ND	20		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Dichloromethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethane	3.0	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroform	2.3	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloroethane	1.7	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	1.8	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	91	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: Toluene-d8	77	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	98	70-130		%Rec	7/18/2017	VOCs by EPA 8260B

NOTES:
Some Reporting Limits were increased due to sample foaming.

Alpha Analytical, Inc
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TEL: (775) 355-1044 FAX: (775) 355-0406
Website: www.alpha-analytical.com

QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **300_0_W**

Sample ID:	**MB-1743**	SampType:	**MBLK**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**PBW**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32033**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID:	**LCSD-1743**	SampType:	**LCSD**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**LCSS02**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32035**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.7	0.5	50	0	99.4	89.51	110.49	49.7	0.021	15	

Sample ID:	**LCS-1743**	SampType:	**LCS**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**LCSW**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32034**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.7	0.5	50	0	99.4	89.51	110.49				

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

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

QC SUMMARY REPORT

WO#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **METALS_T_200_8**

Sample ID: **MB-1764** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **PBW** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31819**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID: **LCS-1764** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **LCSW** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31821**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.8	0.01	2.5	0	112	84.51	115.49				
Iron (Fe)	52.9	0.6	50	0	106	84.51	115.49				

Sample ID: **1707151-03AMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **BatchQC** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31823**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.9	0.01	2.5	0	116	69.51	130.49	2.79	3.7	20	
Iron (Fe)	57.7	0.6	50	0	115	69.51	130.49	56.8	1.7	20	

Sample ID: **1707151-03AMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **BatchQC** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31822**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.79	0.01	2.5	0	111	69.51	130.49				
Iron (Fe)	56.8	0.6	50	0	113	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

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

QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **VOC_W**

Sample ID:	**MB-1710**	SampType:	**MBLK**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**PBW**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30211**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.25									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.25									
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.25									
m,p-Xylene	ND	0.25									
Bromoform	ND	1									
o-Xylene	ND	0.25									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.6		10		95.8	69.51	130.49				
Surr: Toluene-d8	10		10		102	69.51	130.49				
Surr: 4-Bromofluorobenzene	10		10		99.5	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**LCS-1710**	SampType:	**LCS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**LCSW**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30210**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	9.44	2	10	0	94.4	39.51	145.49				
Vinyl chloride	9.78	1	10	0	97.8	69.51	130.49				
Chloroethane	11.4	1	10	0	114	37.51	156.49				
Bromomethane	10.4	2	10	0	104	13.51	162.49				
Trichlorofluoromethane	11.8	1	10	0	118	45.51	154.49				
Acetone	164	10	200	0	82.0	21.51	188.49				
1,1-Dichloroethene	10.3	1	10	0	103	69.51	130.49				
Dichloromethane	8.95	2	10	0	89.5	68.51	130.49				
trans-1,2-Dichloroethene	10.3	1	10	0	103	69.51	130.49				
1,1-Dichloroethane	9.89	1	10	0	98.9	69.51	130.49				
cis-1,2-Dichloroethene	9.14	1	10	0	91.4	69.51	130.49				
Chloroform	9.62	1	10	0	96.2	69.51	130.49				
1,2-Dichloroethane	9.37	1	10	0	93.7	69.51	133.49				
1,1,1-Trichloroethane	10.3	1	10	0	103	69.51	135.49				
Carbon tetrachloride	9.83	1	10	0	98.3	62.51	143.49				
Benzene	9.24	0.25	10	0	92.4	69.51	130.49				
1,2-Dichloropropane	9.72	1	10	0	97.2	69.51	130.49				
Trichloroethene	10.2	1	10	0	102	67.51	138.49				
Bromodichloromethane	9.12	1	10	0	91.2	57.51	147.49				
cis-1,3-Dichloropropene	9.24	1	10	0	92.4	69.51	130.49				
trans-1,3-Dichloropropene	8.34	1	10	0	83.4	69.51	131.49				
1,1,2-Trichloroethane	9.15	1	10	0	91.5	69.51	130.49				
Toluene	10.7	0.25	10	0	107	69.51	130.49				
Dibromochloromethane	8.6	1	10	0	86.0	48.51	147.49				
Tetrachloroethene	11.2	1	10	0	112	69.51	130.49				
Chlorobenzene	10.1	1	10	0	101	69.51	130.49				
Ethylbenzene	10.7	0.25	10	0	107	69.51	130.49				
m,p-Xylene	10.7	0.25	10	0	106	64.51	139.49				
Bromoform	8.11	1	10	0	81.1	59.51	144.49				
o-Xylene	10.2	0.25	10	0	102	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.12	1	10	0	91.2	69.51	130.49				
1,3-Dichlorobenzene	10.3	1	10	0	103	69.51	130.49				
1,4-Dichlorobenzene	10.4	1	10	0	104	69.51	130.49				
1,2-Dichlorobenzene	9.93	1	10	0	99.3	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.42		10		94.2	69.51	130.49				
Surr: Toluene-d8	10.9		10		109	69.51	130.49				
Surr: 4-Bromofluorobenzene	10.4		10		104	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan

TestCode: **VOC_W**

Sample ID:	**1707104-01AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30275**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	50.7	10	50	0	101	25.51	146.49	43.3	16	30	
Vinyl chloride	52.9	5	50	0	106	45.51	142.49	47.3	11	30	
Chloroethane	61.3	5	50	0	123	24.51	164.49	54	13	30	
Bromomethane	62.7	10	50	0	125	9.51	172.49	49.7	23	30	
Trichlorofluoromethane	59.2	5	50	0	118	31.51	164.49	53.7	9.7	30	
Acetone	912	50	1000	0	91.2	9.51	188.49	807	12	30	
1,1-Dichloroethene	54.7	5	50	0	109	61.51	133.49	49.4	10	30	
Dichloromethane	46.3	10	50	0	92.6	68.51	130.49	41.2	12	30	
trans-1,2-Dichloroethene	54.8	5	50	0	110	66.51	131.49	48.1	13	30	
1,1-Dichloroethane	54.1	5	50	0	108	66.51	130.49	47.9	12	30	
cis-1,2-Dichloroethene	49.5	5	50	0	99.0	69.51	130.49	43.4	13	30	
Chloroform	53.5	5	50	0	102	68.51	130.49	47.3	12	30	
1,2-Dichloroethane	49.6	5	50	0	99.2	63.51	139.49	44.8	10	30	
1,1,1-Trichloroethane	56.6	5	50	0	113	64.51	139.49	49.2	14	30	
Carbon tetrachloride	51.7	5	50	0	103	55.51	146.49	45.8	12	30	
Benzene	50.1	1.25	50	0	100	66.51	134.49	44.4	12	30	
1,2-Dichloropropane	50.8	5	50	0	102	68.51	134.49	46.2	9.5	30	
Trichloroethene	54.1	5	50	0	108	67.51	138.49	47.3	13	30	
Bromodichloromethane	49.2	5	50	0	98.4	57.51	147.49	42.7	14	30	
cis-1,3-Dichloropropene	43.3	5	50	0	86.6	60.51	130.49	37.6	14	30	
trans-1,3-Dichloropropene	45.9	5	50	0	91.7	61.51	131.49	40	14	30	
1,1,2-Trichloroethane	49.3	5	50	0	98.6	69.51	131.49	43.5	13	30	
Toluene	53.6	1.25	50	0	107	37.51	130.49	48.3	10	30	
Dibromochloromethane	48.2	5	50	0	96.4	48.51	147.49	41.6	15	30	
Tetrachloroethene	54.4	5	50	0	109	62.51	134.49	49.4	9.6	30	
Chlorobenzene	51.4	5	50	0	103	69.51	130.49	45.5	12	30	
Ethylbenzene	53	1.25	50	0	106	69.51	130.49	47.5	11	30	
m,p-Xylene	52.8	1.25	50	0	106	64.51	139.49	50.7	4.2	30	
Bromoform	46.2	5	50	0	92.4	59.51	144.49	39.1	17	30	
o-Xylene	56.5	1.25	50	0	113	68.51	130.49	48.3	16	30	
1,1,2,2-Tetrachloroethane	48.7	5	50	0	97.4	66.51	134.49	42.9	13	30	
1,3-Dichlorobenzene	53.3	5	50	0	107	69.51	130.49	48	10	30	
1,4-Dichlorobenzene	53.7	5	50	0	107	69.51	130.49	48.6	10	30	
1,2-Dichlorobenzene	52.8	5	50	0	106	69.51	130.49	46.8	12	30	
Surr: 1,2-Dichloroethane-d4	47.3		50		94.7	69.51	130.49	47.1		0	
Surr: Toluene-d8	51.4		50		103	69.51	130.49	50.8		0	
Surr: 4-Bromofluorobenzene	52.9		50		106	69.51	130.49	53.6		0	

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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707104-01AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30274**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	43.3	10	50	0	86.5	25.51	146.49				
Vinyl chloride	47.3	5	50	0	94.6	45.51	142.49				
Chloroethane	54	5	50	0	108	24.51	164.49				
Bromomethane	49.7	10	50	0	99.4	9.51	172.49				
Trichlorofluoromethane	53.7	5	50	0	107	31.51	164.49				
Acetone	807	50	1000	0	80.7	9.51	188.49				
1,1-Dichloroethene	49.4	5	50	0	98.8	61.51	133.49				
Dichloromethane	41.2	10	50	0	82.4	68.51	130.49				
trans-1,2-Dichloroethene	48.1	5	50	0	96.2	66.51	131.49				
1,1-Dichloroethane	47.9	5	50	0	95.9	66.51	130.49				
cis-1,2-Dichloroethene	43.4	5	50	0	86.8	69.51	130.49				
Chloroform	47.3	5	50	0	90.0	68.51	130.49				
1,2-Dichloroethane	44.8	5	50	0	89.5	63.51	139.49				
1,1,1-Trichloroethane	49.2	5	50	0	98.4	64.51	139.49				
Carbon tetrachloride	45.8	5	50	0	91.6	55.51	146.49				
Benzene	44.4	1.25	50	0	88.8	66.51	134.49				
1,2-Dichloropropane	46.2	5	50	0	92.4	68.51	134.49				
Trichloroethene	47.3	5	50	0	94.5	67.51	138.49				
Bromodichloromethane	42.7	5	50	0	85.4	57.51	147.49				
cis-1,3-Dichloropropene	37.6	5	50	0	75.1	60.51	130.49				
trans-1,3-Dichloropropene	40	5	50	0	80.0	61.51	131.49				
1,1,2-Trichloroethane	43.5	5	50	0	87.0	69.51	131.49				
Toluene	48.3	1.25	50	0	96.6	37.51	130.49				
Dibromochloromethane	41.6	5	50	0	83.1	48.51	147.49				
Tetrachloroethene	49.4	5	50	0	98.9	62.51	134.49				
Chlorobenzene	45.5	5	50	0	91.0	69.51	130.49				
Ethylbenzene	47.5	1.25	50	0	95.0	69.51	130.49				
m,p-Xylene	50.7	1.25	50	0	101	64.51	139.49				
Bromoform	39.1	5	50	0	78.3	59.51	144.49				
o-Xylene	48.3	1.25	50	0	96.6	68.51	130.49				
1,1,2,2-Tetrachloroethane	42.9	5	50	0	85.8	66.51	134.49				
1,3-Dichlorobenzene	48	5	50	0	96.1	69.51	130.49				
1,4-Dichlorobenzene	48.6	5	50	0	97.2	69.51	130.49				
1,2-Dichlorobenzene	46.8	5	50	0	93.7	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	47.1		50		94.2	69.51	130.49				
Surr: Toluene-d8	50.8		50		102	69.51	130.49				
Surr: 4-Bromofluorobenzene	53.6		50		107	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#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **VOC_W**

Sample ID:	**MB-1718**	SampType:	**MBLK**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**PBW**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30409**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.25									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.25									
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.25									
m,p-Xylene	ND	0.25									
Bromoform	ND	1									
o-Xylene	ND	0.25									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9		10		90.0	69.51	130.49				
Surr: Toluene-d8	11		10		106	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.9		10		99.3	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**LCS-1718**	SampType:	**LCS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**LCSW**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30408**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	9.27	2	10	0	92.7	39.51	145.49				
Vinyl chloride	9.89	1	10	0	98.9	69.51	130.49				
Chloroethane	11	1	10	0	110	37.51	156.49				
Bromomethane	11.3	2	10	0	113	13.51	162.49				
Trichlorofluoromethane	11.1	1	10	0	111	45.51	154.49				
Acetone	167	10	200	0	83.7	21.51	188.49				
1,1-Dichloroethene	10.2	1	10	0	102	69.51	130.49				
Dichloromethane	8.62	2	10	0	86.2	68.51	130.49				
trans-1,2-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
1,1-Dichloroethane	10.1	1	10	0	101	69.51	130.49				
cis-1,2-Dichloroethene	9.3	1	10	0	93.0	69.51	130.49				
Chloroform	9.45	1	10	0	94.5	69.51	130.49				
1,2-Dichloroethane	9.08	1	10	0	90.8	69.51	133.49				
1,1,1-Trichloroethane	10.2	1	10	0	102	69.51	135.49				
Carbon tetrachloride	9.6	1	10	0	96.0	62.51	143.49				
Benzene	9.31	0.25	10	0	93.1	69.51	130.49				
1,2-Dichloropropane	9.38	1	10	0	93.8	69.51	130.49				
Trichloroethene	10.1	1	10	0	101	67.51	138.49				
Bromodichloromethane	9.03	1	10	0	90.3	57.51	147.49				
cis-1,3-Dichloropropene	9.16	1	10	0	91.6	69.51	130.49				
trans-1,3-Dichloropropene	9.01	1	10	0	90.1	69.51	131.49				
1,1,2-Trichloroethane	9.09	1	10	0	90.9	69.51	130.49				
Toluene	10.1	0.25	10	0	101	69.51	130.49				
Dibromochloromethane	9.17	1	10	0	91.7	48.51	147.49				
Tetrachloroethene	10.8	1	10	0	108	69.51	130.49				
Chlorobenzene	9.64	1	10	0	96.4	69.51	130.49				
Ethylbenzene	9.97	0.25	10	0	99.7	69.51	130.49				
m,p-Xylene	10.1	0.25	10	0	101	64.51	139.49				
Bromoform	8.78	1	10	0	87.8	59.51	144.49				
o-Xylene	9.98	0.25	10	0	99.8	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.03	1	10	0	90.3	69.51	130.49				
1,3-Dichlorobenzene	10.4	1	10	0	104	69.51	130.49				
1,4-Dichlorobenzene	11	1	10	0	110	69.51	130.49				
1,2-Dichlorobenzene	9.82	1	10	0	98.2	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.16		10		91.6	69.51	130.49				
Surr: Toluene-d8	10.3		10		103	69.51	130.49				
Surr: 4-Bromofluorobenzene	11		10		110	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

Alpha Analytical, Inc
255 Glendale Ave, #21
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Website: www.alpha-analytical.com

QC SUMMARY REPORT

WO#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707112-01AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/19/2017**	RunNo:	**1226**	SeqNo:	**30432**		
Analysis Date:	**7/19/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	49.8	10	50	0	99.7	25.51	146.49	52.9	6	30	
Vinyl chloride	58	5	50	0	116	45.51	142.49	60	3.4	30	
Chloroethane	68.1	5	50	0	136	24.51	164.49	68	0.16	30	
Bromomethane	30.9	10	50	0	61.9	9.51	172.49	34.6	11	30	
Trichlorofluoromethane	62.2	5	50	0	124	31.51	164.49	60.8	2.3	30	
Acetone	834	50	1000	0	83.4	9.51	188.49	920	9.9	30	
1,1-Dichloroethene	55.4	5	50	0	111	61.51	133.49	56.8	2.4	30	
Dichloromethane	44.9	10	50	0	89.7	68.51	130.49	48.5	7.8	30	
trans-1,2-Dichloroethene	55.2	5	50	0	110	66.51	131.49	56.2	1.8	30	
1,1-Dichloroethane	52.5	5	50	0	105	66.51	130.49	55.3	5.3	30	
cis-1,2-Dichloroethene	47.9	5	50	0	95.9	69.51	130.49	50	4.2	30	
Chloroform	49.3	5	50	0	98.7	68.51	130.49	50.3	1.9	30	
1,2-Dichloroethane	46.2	5	50	0	90.0	63.51	139.49	48.5	4.9	30	
1,1,1-Trichloroethane	54.2	5	50	0	108	64.51	139.49	56	3.3	30	
Carbon tetrachloride	51.8	5	50	0	104	55.51	146.49	51.9	0.096	30	
Benzene	48.7	1.25	50	0	97.4	66.51	134.49	51	4.6	30	
1,2-Dichloropropane	48.5	5	50	0	97.0	68.51	134.49	49.9	2.8	30	
Trichloroethene	54.8	5	50	0	110	67.51	138.49	54.6	0.33	30	
Bromodichloromethane	47.4	5	50	0	94.7	57.51	147.49	49.4	4.2	30	
cis-1,3-Dichloropropene	46.5	5	50	0	93.1	60.51	130.49	44.4	4.7	30	
trans-1,3-Dichloropropene	46.9	5	50	0	93.8	61.51	131.49	47	0.23	30	
1,1,2-Trichloroethane	48.3	5	50	0	96.7	69.51	131.49	51.3	6	30	
Toluene	52.8	1.25	50	0	106	37.51	130.49	56.9	7.4	30	
Dibromochloromethane	45.9	5	50	0	91.8	48.51	147.49	50.8	10	30	
Tetrachloroethene	58.4	5	50	0	117	62.51	134.49	58.6	0.29	30	
Chlorobenzene	50.5	5	50	0	101	69.51	130.49	53.7	6.1	30	
Ethylbenzene	53.9	1.25	50	0	108	69.51	130.49	57.1	5.6	30	
m,p-Xylene	53.2	1.25	50	0	106	64.51	139.49	58.3	9.2	30	
Bromoform	43	5	50	0	86.0	59.51	144.49	47.8	11	30	
o-Xylene	52.2	1.25	50	0	104	68.51	130.49	55.4	5.9	30	
1,1,2,2-Tetrachloroethane	45.8	5	50	0	91.7	66.51	134.49	50.9	11	30	
1,3-Dichlorobenzene	57.9	5	50	0	116	69.51	130.49	55.6	4	30	
1,4-Dichlorobenzene	55.8	5	50	0	112	69.51	130.49	54.5	2.4	30	
1,2-Dichlorobenzene	50.6	5	50	0	101	69.51	130.49	52.5	3.6	30	
Surr: 1,2-Dichloroethane-d4	44.6		50		89.2	69.51	130.49	45.1		0	
Surr: Toluene-d8	51.7		50		103	69.51	130.49	52.2		0	
Surr: 4-Bromofluorobenzene	56		50		112	69.51	130.49	52.9		0	

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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707112-01AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30431**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	52.9	10	50	0	106	25.51	146.49				
Vinyl chloride	60	5	50	0	120	45.51	142.49				
Chloroethane	68	5	50	0	136	24.51	164.49				
Bromomethane	34.6	10	50	0	69.3	9.51	172.49				
Trichlorofluoromethane	60.8	5	50	0	122	31.51	164.49				
Acetone	920	50	1000	0	92.0	9.51	188.49				
1,1-Dichloroethene	56.8	5	50	0	114	61.51	133.49				
Dichloromethane	48.5	10	50	0	97.0	68.51	130.49				
trans-1,2-Dichloroethene	56.2	5	50	0	112	66.51	131.49				
1,1-Dichloroethane	55.3	5	50	0	111	66.51	130.49				
cis-1,2-Dichloroethene	50	5	50	0	100	69.51	130.49				
Chloroform	50.3	5	50	0	101	68.51	130.49				
1,2-Dichloroethane	48.5	5	50	0	94.6	63.51	139.49				
1,1,1-Trichloroethane	56	5	50	0	112	64.51	139.49				
Carbon tetrachloride	51.9	5	50	0	104	55.51	146.49				
Benzene	51	1.25	50	0	102	66.51	134.49				
1,2-Dichloropropane	49.9	5	50	0	99.8	68.51	134.49				
Trichloroethene	54.6	5	50	0	109	67.51	138.49				
Bromodichloromethane	49.4	5	50	0	98.8	57.51	147.49				
cis-1,3-Dichloropropene	44.4	5	50	0	88.8	60.51	130.49				
trans-1,3-Dichloropropene	47	5	50	0	94.0	61.51	131.49				
1,1,2-Trichloroethane	51.3	5	50	0	103	69.51	131.49				
Toluene	56.9	1.25	50	0	114	37.51	130.49				
Dibromochloromethane	50.8	5	50	0	102	48.51	147.49				
Tetrachloroethene	58.6	5	50	0	117	62.51	134.49				
Chlorobenzene	53.7	5	50	0	107	69.51	130.49				
Ethylbenzene	57.1	1.25	50	0	114	69.51	130.49				
m,p-Xylene	58.3	1.25	50	0	117	64.51	139.49				
Bromoform	47.8	5	50	0	95.6	59.51	144.49				
o-Xylene	55.4	1.25	50	0	111	68.51	130.49				
1,1,2,2-Tetrachloroethane	50.9	5	50	0	102	66.51	134.49				
1,3-Dichlorobenzene	55.6	5	50	0	111	69.51	130.49				
1,4-Dichlorobenzene	54.5	5	50	0	109	69.51	130.49				
1,2-Dichlorobenzene	52.5	5	50	0	105	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	45.1		50		90.2	69.51	130.49				
Surr: Toluene-d8	52.2		50		104	69.51	130.49				
Surr: 4-Bromofluorobenzene	52.9		50		106	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

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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Website: www.alpha-analytical.com

Definition Only

WO#: **1707079**

Date:

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1707079
Report Due By: 26-Jul-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: HA Chan

Date Received: 12-Jul-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	METALS_T_200_8	VOC_W					Sample Remarks
PES1707079-01	HA Chan Con-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-02	HA Chan AP-pH LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-03	HA Chan AP-pH HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-04	HA Chan AP-Fe-LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-05	HA Chan AP-Fe-HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-06	HA Chan KMnO4 LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-07	HA Chan KMnO4 HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					

Comments:

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	7/12/17 1215

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

CHAIN OF CUSTODY

2876

Billing Information:

Company: PRIMA Env
Attn:
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: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 — Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: Elko, NV 89801 — Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 — Phone: 702-281-4848

Page # 1 of 1

Consultant/ Client Info:

Company: PRIMA
Address:
City, State, Zip:

Job and Purchase Order Info:

Job # HA Chan
Job Name:
P.O. #:

Report Attention/Project Manager:

Name: Cindy Schreier
Email Address: data@primaenvironmental.com
Phone #:
Cell #: 916-939-7300

QC Deliverable Info:

EDD Required? Yes / No — EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs-8260	Chloride	~~Chromium~~	Iron	Manganese						Remarks
1130	7/11	AQ	PES1707079-01	HAChan Con B	std				X	X		X	X						
			02	HA Chan AP-pH LD-B					X	X		X	X						
			03	HA Chan AP-pH HD-B					X	X		X	X						
			04	HA Chan AP-Fe-LD-B					X	X		X	X						
			05	HA Chan AP-Fe-HD-B					X	X		X	X						
			06	HA Chan KMnO4 LD-B					X	X		X	X						
			07	HA Chan KMnO4 HD-B					X	X		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 445.0636 (c) (2).

Sampled By:

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
PRIMA	7/11/17	~1630	FEDEX		
				7/12/17	1200

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

07/16

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706B49

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA-Chandler

Project Received: 06/23/2017

Analytical Report reviewed & approved for release on 07/03/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

McCampbell Analytical, Inc.
"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chandler
WorkOrder: 1706B49

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chandler
WorkOrder: 1706B49

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits
b1	Aqueous sample that contains greater than ~1 vol. % sediment
c2	Surrogate recovery outside of the control limits due to matrix interference.

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Received:	6/23/17 9:29	**Extraction Method:**	SW5030B
Date Prepared:	7/3/17	**Analytical Method:**	SW8260B
Project:	HA-Chandler	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
CON-A	**1706B49-001A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	50	100	07/03/2017 10:38

Surrogates	REC (%)	Limits	
Dibromofluoromethane	121	70-130	07/03/2017 10:38

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-pH-LD-A	**1706B49-002A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**590**	50	100	07/03/2017 11:16

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 11:16

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-pH-HD-A	**1706B49-003A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result		RL	DF	Date Analyzed
1,4-Dioxane	ND		0.50	1	07/03/2017 11:53
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	2	S	70-130		07/03/2017 11:53

Analyst(s): HK Analytical Comments: c2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-Fe-LD-A	**1706B49-004A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**220**	25	50	07/03/2017 12:31

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 12:31

Analyst(s): HK

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Received:	6/23/17 9:29	**Extraction Method:**	SW5030B
Date Prepared:	7/3/17	**Analytical Method:**	SW8260B
Project:	HA-Chandler	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-Fe-HD-A	**1706B49-005A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**38**	2.5	5	07/03/2017 13:09

Surrogates	REC (%)	Limits	
Dibromofluoromethane	130	70-130	07/03/2017 13:09

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMnO4-LD-A	**1706B49-006A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**870**	50	100	07/03/2017 13:46

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 13:46

Analyst(s): HK Analytical Comments: b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMnO4-HD-A	**1706B49-007A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	50	100	07/03/2017 14:24

Surrogates	REC (%)	Limits	
Dibromofluoromethane	123	70-130	07/03/2017 14:24

Analyst(s): HK Analytical Comments: b1

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Prepared:	7/1/17	**BatchID:**	141431
Date Analyzed:	7/1/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA-Chandler	**Sample ID:**	MB/LCS/LCSD-141431

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	30.37		25	121	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	8.82	9.45	10	88	95	70-130	6.93	20
Surrogate Recovery								
Dibromofluoromethane	30.1	30.4	25	120	122	70-130	1.05	20

McCampbell Analytical, Inc.

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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706B49 **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA-Chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/23/2017
Date Logged: 06/23/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706B49-001	CON-A	Water	6/20/2017 15:00	☐	A											
1706B49-002	Ap-pH-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-003	Ap-pH-HD-A	Water	6/20/2017 15:00	☐	A											
1706B49-004	Ap-Fe-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-005	Ap-Fe-HD-A	Water	6/20/2017 15:00	☐	A											
1706B49-006	KMnO4-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-007	KMnO4-HD-A	Water	6/20/2017 15:00	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA-Chandler
Comments:

Work Order: 1706B49
QC Level: LEVEL 2
Date Logged: 6/23/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706B49-001A	CON-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-002A	Ap-pH-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-003A	Ap-pH-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-004A	Ap-Fe-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-005A	Ap-Fe-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-006A	KMnO4-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	1%+	☐	
1706B49-007A	KMnO4-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	1%+	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706B49

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #			
J-Flag / MDL		ESL		Cleanup Approved					Bottle Order #			
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)			EQuIS		

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Bill To:

Tele:

Project Name: HA-Chandler
Project #:
Project Location:
PO #
Sampler Signature: CL

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
Con-A	6/20/17	1500	2	AQ	HCl																X			
Ap-pH-LD-A	↓	↓	↓	↓	↓																X			
Ap-pH-HD-A																					X			
Ap-Fe-LD-A																					X			
Ap-Fe-HD-A																					X			
KMnO4-LD-A																					X			
KMnO4-HD-A																					X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Catherine Ryan / PRIMA	6/20/17	1800	FED EX	—	—
FedEx				6/23/17	0929

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 21.4 °C wet Initials

Page ___ of ___

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Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/23/2017 09:29**
Project Name:	**HA-Chandler**	Date Logged:	**6/23/2017**
		Received by:	Jena Alfaro
WorkOrder №:	**1706B49** Matrix: Water	Logged by:	Jena Alfaro
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 21.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

June 14, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
Ste. 300
El Dorado Hills, CA 95762

RE: Project: HA-Chand
Pace Project No.: 1289440

Dear Cindy Schreier:
Enclosed are the analytical results for sample(s) received by the laboratory on June 14, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott Forbes

Scott M Forbes
scott.forbes@pacelabs.com
(530) 297-4800
Project Manager

Enclosures

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2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

CERTIFICATIONS

Project:	HA-Chand
Pace Project No.:	1289440

Davis Cerification IDs

2795 Second Street Suite 300 Davis, CA 95618
North Dakota Certification #: R-214
Oregon Certification #: CA300002
Washington Certification #: C926-15a
California Certification #: 08263CA
Minnesota Department of Health Certification #: 006-999-465

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SAMPLE SUMMARY

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1289440001	**HA-chan-T0**	Water	06/13/17 18:10	06/14/17 10:00

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SAMPLE ANALYTE COUNT

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1289440001	**HA-chan-T0**	EPA 7199	SJ1	1	PASI-DAV

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ANALYTICAL RESULTS

Project: HA-Chand
Pace Project No.: 1289440

Sample: HA-chan-T0 **Lab ID: 1289440001** Collected: 06/13/17 18:10 Received: 06/14/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7199 Chromium, Hexavalent	Analytical Method: EPA 7199							
Chromium, Hexavalent	**4.6**	ug/L	1.0	1		06/14/17 12:47	18540-29-9	M1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HA-Chand
Pace Project No.: 1289440

QC Batch: 116460
QC Batch Method: EPA 7199
Analysis Method: EPA 7199
Analysis Description: 7199 Chromium, Hexavalent
Associated Lab Samples: 1289440001

METHOD BLANK: 459804
Matrix: Water
Associated Lab Samples: 1289440001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	1.0	06/14/17 12:34	

LABORATORY CONTROL SAMPLE: 459805

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 459806 459807

Parameter	Units	1289440001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	ug/L	4.6	5	5	10.0	10.4	107	116	90-110	4	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HA-Chand
Pace Project No.: 1289440

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DAV	Pace Analytical Services - Davis

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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Davis, CA 95618
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1289440001	**HA-chan-T0**	EPA 7199	116460		

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Phone: Fax:
Requested Due Date/TAT: STD

Project Name: HA-Chand
Project Number:

Section C
Invoice Information:
Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

Page: 1 of 1

REGULATORY AGENCY
NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER
Site Location STATE:

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): Y

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Cr(VI)-7199	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	HA-Chan-T8	WT		~~6/15~~ 6/13/17	1810	Room	1	X								X		001

1289440

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Catherine Ligon / PRIMA	6/13/17	1330	FED EX						
				→ Pace	6/14/17	1000	1.9	Y	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Catherine Ligon
SIGNATURE of SAMPLER: Catherine Ligon
DATE Signed (MM/DD/YY): 6/13/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: **F-DAV-C-002-rev.02**	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Prima

Project #: WO#: 1289440 (1289440)

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other: _____

Tracking Number: 80999440 4059

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 **Type of Ice:** ☑ Wet ☐ Blue ☐ Dry Ice ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 1.2 **Cooler Temp Corrected(°C):** 1.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.7 **Date and Initials of Person Examining Contents:** DJ 06/14/17

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1. No time indicated on client
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2. label, SR will login at 1810
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3. per COC
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☐ Yes	☑ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Scott Turner **Date:** 6/14/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

June 28, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
Ste. 300
El Dorado Hills, CA 95762

RE: Project: HA-Chander
Pace Project No.: 1290006

Dear Cindy Schreier:
Enclosed are the analytical results for sample(s) received by the laboratory on June 21, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott Forbes

Scott M Forbes
scott.forbes@pacelabs.com
(530) 297-4800
Project Manager

Enclosures

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(530) 297-4800

SAMPLE SUMMARY

Project: HA-Chander
Pace Project No.: 1290006

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1290006001	**Con-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006002	**Ap-pH-LD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006003	**Ap-pH-HD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006004	**Ap-Fe-LD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006005	**Ap-Fe-HD-A**	Water	06/20/17 15:00	06/21/17 09:45

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Section B Required Project Information:

er No.: Project: HA-Chandler

er:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER
UST | RCRA | OTHER

Site Location STATE:

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Cr(VI) 7199	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 1290006
	Con-A	WT		6/20/17	1500	Room	1	X									X		001
	Ap-pH-LD-A	↓		↓	↓	↓	1	X									X		002
	Ap-pH-HD-A	↓		↓	↓	↓	1	X									X		003
	Ap-Fe-LD-A	↓		↓	↓	↓	1	X									X		004
	Ap-Fe-HD-A	↓		↓	↓	↓	1	X									X		005

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Catherine Ligon / PRIMA	6/20/17	1500	FED EX / Pace	062117	0945	2.9	Y	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Catherine Ligon

SIGNATURE of SAMPLER: Catherine Ligon

DATE Signed (MM/DD/YY): 6/20/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: **F-DAV-C-002-rev.02**	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Prima

Project #: WO#: 1290006 (1290006)

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other:

Tracking Number: 8099 9440 4060

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 **Type of Ice:** ☐ Wet ☐ Blue ☐ Dry Ice ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 2.2 **Cooler Temp Corrected(°C):** 2.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.7 **Date and Initials of Person Examining Contents:** DJD062117

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out? DJD062117	☑ Yes	☑ No	☐ N/A	2. No TAT indicated
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☑ Yes	☐ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT DJD062117	☑ Yes	☑ No	☐ N/A	12. No times indicated on client labels, SR will login per COC times
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Scott Jones **Date:** 8/21/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

June 28, 2017

CLS Work Order #: 17F0995
COC #:

Scott Forbes
Pace Analytical Services, Inc. - Davis
2795 Second St. Suite 300
Davis, CA 95616

Project Name: HA-Chander

Enclosed are the results of analyses for samples received by the laboratory on 06/23/17 11:47. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

Chain of Custody

Pace Analytical
www.pacelabs.com

17F0995

Workorder: 1290006 **Workorder Name:** HA-Chander **Results Requested By:** 6/28/2017

Report / Invoice To

Scott M Forbes
Pace Analytical Davis
2795 Second Street
Suite 300
Davis, CA 95618
Phone (530) 297-4800
Email: scott.forbes@pacelabs.com

CLS

Subcontract To

P.O. 1290006

State of Sample Origin: CA

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: Hexavalent Chromium												LAB USE ONLY
1	Con-A	6/20/2017 15:00	1290006001	Water	1						X												
2	Ap-pH-LD-A	6/20/2017 15:00	1290006002	Water	1						X												
3	Ap-pH-HD-A	6/20/2017 15:00	1290006003	Water	1						X												
4	Ap-Fe-LD-A	6/20/2017 15:00	1290006004	Water	1						X												
5	Ap-Fe-HD-A	6/20/2017 15:00	1290006005	Water	1						X												

Transfers	Released By	Date/Time	Received By	Date/Time
1	Pace	062316 1146	[illegible]	6/23/17 1147 0.6
2				
3				

Comments

Cooler Temperature on Receipt _____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

10 mg/L Persulfate in Samples labeled "HD"

CLS LABS
SAMPLE RECEIVING EXCEPTION REPORTS

CLS Labs Job # 17F0995 - PINK.

Problem discovered by: GG. **Date:** 6/23/17.

Nature of problem

RECEIVED SAMPLES OUT OF HOLD FOR.
Cr 6 - NO PRESERVATION

Client contacted? Yes _____ **No** _____ **Spoke With:** _____

By whom: _____ **Date:** / / **Time:** _____ **HRS**

Client instructions:

Resolution of problem:

LOGGED IN REGARDLESS OF HOLD
TIME

H:\WillOrellana\SampleException.Doc

CALIFORNIA LABORATORY SERVICES

 06/28/17 13:49

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Con-A 1290006001 (17F0995-01) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.5**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-pH-LD-A 1290006002 (17F0995-02) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.2**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-pH-HD-A 1290006003 (17F0995-03) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**48**	10	µg/L	10	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-Fe-LD-A 1290006004 (17F0995-04) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**3.7**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-Fe-HD-A 1290006005 (17F0995-05) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.7**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1704684 - General Prep										
Blank (1704684-BLK1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	ND	1.0	µg/L							
LCS (1704684-BS1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	4.79	1.0	µg/L	5.00		96	80-120			
LCS Dup (1704684-BSD1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	5.50	1.0	µg/L	5.00		110	80-120	14	20	
Matrix Spike (1704684-MS1)		**Source: 17F0815-01**		Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	4.29	1.0	µg/L	5.00	ND	86	80-120			
Matrix Spike Dup (1704684-MSD1)		**Source: 17F0815-01**		Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	ND	1.0	µg/L	5.00	ND		80-120		20	QM-7

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
HT-1	The sample was received outside of the EPA recommended holding time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706178

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A- chandler

Project Received: 06/05/2017

Analytical Report reviewed & approved for release on 06/13/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A- chandler
WorkOrder: 1706178

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW3060A
Date Prepared:	6/8/17	**Analytical Method:**	SW7199
Project:	H&A- chandler	**Unit:**	mg/Kg

Hexavalent chromium by Alkaline Digestion and IC Analysis

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**IC2**	**140158**

Analytes	Result	RL	DF	Date Analyzed
Hexavalent chromium	ND	4.0	1	06/08/2017 19:17

Analyst(s): DP

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW9060A
Date Prepared:	6/12/17	**Analytical Method:**	SW9060A
Project:	H&A- chandler	**Unit:**	mg/kg

Total Organic Carbon (TOC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**WC_CNS**	**140310**

Analytes	Result	RL	DF	Date Analyzed
TOC	ND	200	1	06/12/2017 19:43

Analyst(s): RB

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/8/17	**BatchID:**	140158
Date Analyzed:	6/8/17 - 6/9/17	**Extraction Method:**	SW3060A
Instrument:	IC2	**Analytical Method:**	SW7199
Matrix:	Soil	**Unit:**	mg/Kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS-140158 1706188-001AMS/MSD

QC Summary Report for SW7199 (Hexavalent chromium)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Hexavalent chromium	ND	206	4.0	200	-	103	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Hexavalent chromium	196	193	200	ND	98	97	70-130	1.34	20

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/12/17	**BatchID:**	140310
Date Analyzed:	6/12/17	**Extraction Method:**	SW9060A
Instrument:	WC_CNS	**Analytical Method:**	SW9060A
Matrix:	Soil	**Unit:**	mg/kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS-140310 1706273-001AMS/MSD

QC Summary Report for SW9060A

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TOC	ND	8140	200	8200	-	99	80-120

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TOC	NR	NR		32000	NR	NR	-	NR	-

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706178 **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A- chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/05/2017
Date Logged: 06/05/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706178-001	HA-ch-Su	Soil	5/31/2017 15:30	☐	A	A										

Test Legend:

1	7199_TTLC_S	2	cnsTOC_S	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Kena Ponce

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: H&A- chandler
Comments: 14Dioxane added 6/8/17 RUSH TAT

Work Order: 1706178
QC Level: LEVEL 2
Date Logged: 6/5/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706178-001A	HA-ch-Su	Soil	SW9060A (TOC)	1	8OZ GJ	☐	5/31/2017 15:30	5 days		☐	
			SW8260B (1,4-Dioxane) (SIM Mode)			☐		2 days		☐	
			SW7199 (Hexavalent chromium)			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706178

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
main@mccampbell.com

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD X | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Bill To:
Tele:
Project Name: H&A-Chandler
Project #:
Project Location:
PO #
Sampler Signature: Cathy Lin

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	TOC - 9060	Cr(VI) - 7199		
HA-ch-S0	5/31/17	1530	1	Soil	—																X	X		

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Cathy Lynn / PRIMA	5/31/17	1730	FED EX		
FED EX			[signature]	6/5/17	0928

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 20.8 °C Initials KP

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/5/2017 09:28**
Project Name:	**H&A- chandler**	Date Logged:	**6/5/2017**
		Received by:	
WorkOrder №:	**1706178** Matrix:	Logged by:	Kena Ponce
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 20.8°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706178 A

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A- chandler

Project Received: 06/05/2017

Analytical Report reviewed & approved for release on 06/13/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A- chandler
WorkOrder: 1706178

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW5030B
Date Prepared:	6/9/17	**Analytical Method:**	SW8260B
Project:	H&A- chandler	**Unit:**	mg/kg

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**GC38**	**140263**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	ND	0.020	1	06/13/2017 11:43

Surrogates	REC (%)	Limits	
Dibromofluoromethane	101	70-130	06/13/2017 11:43
Benzene-d6	95	60-140	06/13/2017 11:43

Analyst(s): HK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/9/17	**BatchID:**	140263
Date Analyzed:	6/12/17 - 6/13/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS/LCSD-140263 1706178-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.020	-	-	-
Surrogate Recovery					
Dibromofluoromethane	0.1246		0.12	100	70-130
Benzene-d6	0.1197		0.10	120	60-140

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	0.0366	0.0371	0.050	73	74	70-130	1.28	20
Surrogate Recovery								
Dibromofluoromethane	0.127	0.125	0.12	101	100	70-130	1.16	20
Benzene-d6	0.114	0.106	0.10	114	106	60-140	7.16	20

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,4-Dioxane	0.0376	0.0376	0.050	ND	75	75	70-130	0	20
Surrogate Recovery									
Dibromofluoromethane	0.124	0.125	0.12		99	100	70-130	1.14	20
Benzene-d6	0.114	0.117	0.10		114	117	60-140	2.32	20

McCampbell Analytical, Inc.
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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706178 A **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A- chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 2 days;

Date Received: 06/05/2017
Date Logged: 06/05/2017
Date Add-On: 06/08/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706178-001	HA-ch-Su	Soil	5/31/2017 15:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_S	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Kena Ponce

Add-On Prepared By: Jena Alfaro

Comments: 14Dioxane added 6/8/17 RUSH TAT

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email data@primaenvironmental.com

Project: H&A- chandler
Comments: 14Dioxane added 6/8/17 RUSH TAT

Work Order: 1706178
QC Level: LEVEL 2
Date Logged: 6/5/2017
Date Add-On: 6/8/2017

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706178-001A	HA-ch-Su	Soil	SW8260B (1,4-Dioxane) (SIM Mode)	1	8OZ GJ	5/31/2017 15:30	2 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706178

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
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main@mccampbell.com

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #	
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Bill To:

Tele:

Project Name: H&A-Chandler Project #:

Project Location: PO #

Sampler Signature: Cathe Lin

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	TOC - 9060	Cr(VI) - 7199	14 Dioxane 8260 6/8/17 RUSH	
HA-ch-SU	5/31/17	1530	1	Soil	—																X	X	X	

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Catherine Lynn / PRIMA	5/31/17	1730	FED EX	—	—
FED EX	—	—	[signature]	6/5/17	0928

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 20.8 °C Initials KF

Page ___ of ___

McCampbell Analytical, Inc.

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Analytical Report

WorkOrder: 1706231

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA-Chan

Project Received: 06/06/2017

Analytical Report reviewed & approved for release on 06/08/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chan
WorkOrder: 1706231

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

McCampbell Analytical, Inc.
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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706231
Date Received:	6/6/17 9:48	**Extraction Method:**	SW5030B
Date Prepared:	6/8/17	**Analytical Method:**	SW8260B
Project:	HA-Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HAChan- Unt GW	**1706231-001A**	**Water**	**06/05/2017 17:30**	**GC38**	**140155**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**1300**	10	20	06/08/2017 16:21

Surrogates	REC (%)	Limits	
Dibromofluoromethane	114	70-130	06/08/2017 16:21

Analyst(s): AK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706231
Date Prepared:	6/8/17	**BatchID:**	140155
Date Analyzed:	6/8/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA-Chan	**Sample ID:**	MB/LCS/LCSD-140155

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	28.69		25	115	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	10.7	11.3	10	107	113	70-130	4.96	20
Surrogate Recovery								
Dibromofluoromethane	29.2	29.2	25	117	117	70-130	0	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706231 **ClientCode: PEM** **QuoteID: 5998**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA-Chan

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 2 days;
Date Received: 06/06/2017
Date Logged: 06/06/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706231-001	HAChan- Unt GW	Water	6/5/2017 17:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Tina Perez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA-Chan
Comments:

Work Order: 1706231
QC Level:
Date Logged: 6/6/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ■ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706231-001A	HAChan- Unt GW	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/5/2017 17:30	2 days	Trace	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

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General COC

MAI Work Order # 1706231

6

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

RUSH

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush	X	3 Day Rush		STD		Quote #	
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Report To: Cindy Schreier Bill To: PRIMA
Company: PRIMA
Email: data@primaenvironmental.com
Alt Email: Tele: 916-939-7300
Project Name: HA-Chan Project #:
Project Location: PO #
Sampler Signature: CS

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
+ HAChan-Unt GW	6-5-17	1730	2	AQ	HCl																X			

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* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
CS PRIMA	6/5/17	~1820	FedEx		
			[signature]	6/6/17	14:51

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 10.3 °C Initials TP

Page ___ of ___

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Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received:	**6/6/2017 09:48**
Project Name:	**HA-Chan**	Date Logged:	**6/6/2017**
		Received by:	Tina Perez
WorkOrder №:	**1706231** Matrix: Water	Logged by:	Tina Perez
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 10.3°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706713

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A-Channel

Project Received: 06/15/2017

Analytical Report reviewed & approved for release on 06/21/2017 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A-Channel
WorkOrder: 1706713

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706713
Date Received:	6/15/17 9:56	**Extraction Method:**	SW5030B
Date Prepared:	6/19/17	**Analytical Method:**	SW8260B
Project:	H&A-Channel	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-Chan-T0	**1706713-001A**	**Water**	**06/13/2017 18:10**	**GC38**	**140742**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**1000**	50	100	06/19/2017 17:05

Surrogates	REC (%)	Limits	
Dibromofluoromethane	108	70-130	06/19/2017 17:05

Analyst(s): HK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706713
Date Prepared:	6/19/17	**BatchID:**	140742
Date Analyzed:	6/19/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	H&A-Channel	**Sample ID:**	MB/LCS/LCSD-140742

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	26.37		25	105	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	9.18	9.64	10	92	96	70-130	4.89	20
Surrogate Recovery								
Dibromofluoromethane	27.0	26.8	25	108	107	70-130	0.733	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706713 **ClientCode: PEM** **QuoteID: 6157**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A-Channel

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/15/2017
Date Logged: 06/15/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706713-001	HA-Chan-T0	Water	6/13/2017 18:10	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: H&A-Channel
Comments:

Work Order: 1706713
QC Level:
Date Logged: 6/15/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ■ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706713-001A	HA-Chan-T0	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/13/2017 18:10	5 days	Present	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706713

McCAMPBELL ANALYTICAL, INC.

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main@mccampbell.com

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #			
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #			
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS		

Bill To:

Tele:

Project Name: H&A - chand Project #:

Project Location: PO #

Sampler Signature:

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
HA-Chan-TØ	6/13/17	1810	2	AQ	HCl																X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
[signature] / PRIMA	6/14/17	1500	FED EX		
Fedex 8694 0808 1228			[signature]	6/15/17	956

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 6.2 °C Initials [initials]

Page ___ of ___

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Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/15/2017 09:56**
Project Name:	**H&A-Channel**	Date Logged:	**6/15/2017**
		Received by:	Jena Alfaro
WorkOrder №:	**1706713** Matrix: Water	Logged by:	Jena Alfaro
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 6.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

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Analytical Report

WorkOrder: 1707379

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA Chan

Project Received: 07/12/2017

Analytical Report reviewed & approved for release on 07/19/2017 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA Chan
WorkOrder: 1707379

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Received:	7/12/17 9:41	**Extraction Method:**	SW5030B
Date Prepared:	7/19/17	**Analytical Method:**	SW8260B
Project:	HA Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Con B	**1707379-001A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**880**	10	20	07/19/2017 13:00

Surrogates	REC (%)	Limits	
Dibromofluoromethane	108	70-130	07/19/2017 13:00

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-PH LD-B	**1707379-002A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**300**	2.5	5	07/19/2017 13:38

Surrogates	REC (%)	Limits	
Dibromofluoromethane	110	70-130	07/19/2017 13:38

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-PH HD-B	**1707379-003A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	ND	0.50	1	07/19/2017 00:21

Surrogates	REC (%)	Limits	
Dibromofluoromethane	116	70-130	07/19/2017 00:21

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-Fe LD-B	**1707379-004A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**440**	10	20	07/19/2017 00:59

Surrogates	REC (%)	Limits	
Dibromofluoromethane	111	70-130	07/19/2017 00:59

Analyst(s): JEM

(Cont.)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Received:	7/12/17 9:41	**Extraction Method:**	SW5030B
Date Prepared:	7/19/17	**Analytical Method:**	SW8260B
Project:	HA Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-Fe HD-B	**1707379-005A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**7.2**	0.50	1	07/19/2017 01:37

Surrogates	REC (%)	Limits	
Dibromofluoromethane	126	70-130	07/19/2017 01:37

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMn04-LD-B	**1707379-006A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	10	20	07/19/2017 14:16

Surrogates	REC (%)	Limits	
Dibromofluoromethane	107	70-130	07/19/2017 14:16

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMn04-HD-B	**1707379-007A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**570**	10	20	07/19/2017 14:54

Surrogates	REC (%)	Limits	
Dibromofluoromethane	107	70-130	07/19/2017 14:54

Analyst(s): JEM

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Prepared:	7/18/17	**BatchID:**	142217
Date Analyzed:	7/18/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA Chan	**Sample ID:**	MB/LCS/LCSD-142217

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	27.93		25	112	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	9.38	9.80	10	94	98	70-130	4.33	20
Surrogate Recovery								
Dibromofluoromethane	28.0	28.2	25	112	113	70-130	0.857	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1707379 **ClientCode: PEM** **QuoteID: 5998**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA Chan

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 07/12/2017
Date Logged: 07/12/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1707379-001	Con B	Water	7/11/2017 11:30	☐	A											
1707379-002	AP-PH LD-B	Water	7/11/2017 11:30	☐	A											
1707379-003	AP-PH HD-B	Water	7/11/2017 11:30	☐	A											
1707379-004	AP-Fe LD-B	Water	7/11/2017 11:30	☐	A											
1707379-005	AP-Fe HD-B	Water	7/11/2017 11:30	☐	A											
1707379-006	KMn04-LD-B	Water	7/11/2017 11:30	☐	A											
1707379-007	KMn04-HD-B	Water	7/11/2017 11:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA Chan
Comments:

Work Order: 1707379
QC Level:
Date Logged: 7/12/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1707379-001A	Con B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-002A	AP-PH LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-003A	AP-PH HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-004A	AP-Fe LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-005A	AP-Fe HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	None	☐	
1707379-006A	KMn04-LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-007A	KMn04-HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

1707379 MAI Work Order # ~~1707391~~

6

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
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CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Report To: Cindy Schreir Bill To: PRIMA Env
Company: PRIMA Env
Email: datacprimaenvironmental.com
Alt Email: Tele: 916-939-7300
Project Name: HA Chan Project #:
Project Location: PO #
Sampler Signature:

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane 8260 SIM			
+ Con B	7/11/17	1130	2	water	HCl																X			
+ AP-pH LD-B			2																		X			
+ AP-pH HD-B			2																		X			
+ AP-Fe LD-B			2																		X			
✓ AP-Fe HD-B			2																		X			
+ ~~AP~~ KMnO4-LD-B			2																		X			
+ KMnO4-HD-B			2																		X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions: Quote 5998

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
~~FedEx~~ PRIMA	7/11/17	~1630	FedEx		
CAS			[illegible]	7/12	0941

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 7.4 °C Initials

WET ICE

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**7/12/2017 09:41**
Project Name:	**HA Chan**	Date Logged:	**7/12/2017**
		Received by:	Agustina Venegas
WorkOrder №:	**1707379** Matrix: Water	Logged by:	Agustina Venegas
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Sample IDs noted by Client on COC?	Yes ☑	No ☐	
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐	
Sampler's name noted on COC?	Yes ☑	No ☐	

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 7.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

PRIMA ENVIRONMENTAL INC.

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CHAIN of CUSTODY

Project Manager: BRUCE TRAVERS
Project Name: PLYMOUTH TUBE CHANDLER
Job Number: 128159-003 TASK 9
Sampler Signature:

Phone: 602-760-2461
~~Fax~~ CELL: 480-244-5890
Email: BTRAVERS@HALEYALDRICH.COM
TAT:

SAMPLE ID	Date	Time	Matrix	# Containers	Analysis: TREATABILITY STUDY 8/30/16 PROPOSAL										Comments
PT-6D	8-27-14		S	2	X	X									SOIL FOR TREATABILITY STUDY 8/30/16 PROPOSAL Two 5 gal buckets shipped.

Special Instructions	Relinquished by:		Received by:
SOIL FOR PROPOSAL DATED AUGUST 30, 2016. HALEY & ALDRICH - PLYMOUTH TUBE, CHANDLER	Company HALEY & ALDRICH	Date 5-24-17	Company
	Printed Name Chad Price	Time 14:30	Printed Name
	Signature		Signature
	Relinquished by:		**Received by:**
	Company	Date 5/25/17	Company PRIMA
	Printed Name	Time 0940	Printed Name Catherine Liguori
	Signature		Signature

Matrix key: S - soil/sediment; W - water; OT - other

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CHAIN of CUSTODY

Project Manager: BRUCE TRAVERS
Project Name: PLYMOUTH TUBE CHANDLER
Job Number: 128159-003 TASK 9
Sampler Signature:

Phone: 602-760-2461
CELL ~~Fax~~: 480-244-5890
Email: BTRAVERS@HALEYALDRICH.COM
TAT:

SAMPLE ID	Date	Time	Matrix	# Containers	TREATABILITY STUDY 8/30/16 PROPOSAL										Comments
															in good condition & on ice
LB-7R	5-24-17	10:50	W	20	X	X									20 - 1L BOTTLES OF GROUNDWATER FROM MONITOR WELL LB-7R FOR TREATABILITY STUDY 8/30/16 PROPOSAL
															4 total coolers!

Special Instructions	Relinquished by:		Received by:
GROUNDWATER FOR PROPOSAL DATED AUGUST 30, 2016. HALEY & ALDRICH - PLYMOUTH TUBE, CHANDLER	Company HALEY & ALDRICH	Date 5-24-17	Company ~~Company~~
	Printed Name Chad Price	Time 14:30	Printed Name
	Signature 14:30		Signature
	Relinquished by:		**Received by:**
	Company	Date 5/25/17	Company PRIMA
	Printed Name	Time 0940	Printed Name Catherine Liguori
	Signature		Signature

Matrix key: S - soil/sediment; W - water; OT - other

PRIMA ENVIRONMENTAL INC.

August 15, 2017

Bruce Travers
Haley & Aldrich, Inc.
One Arizona Center
400 East Van Buren Street, Suite 545
Phoenix, Arizona 85004

RE: Final Report of Findings "Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs", Plymouth Tube Chandler H&A Project Number: 128159-003 Task 9

Dear Mr. Travers:

Enclosed is the final report of findings entitled "Bench-scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs" that describes bench testing conducted on soil and groundwater from the Plymouth Tube Chandler site. If you have any questions, please contact me at cschreier@primaenvironmental.com or 916-939-7300. Thank you for the opportunity to be of service.

Sincerely,
PRIMA Environmental, Inc.

Cindy G. Schreier, Ph.D.
President and Chief Scientist

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Report of Findings

Bench-Scale Evaluation of Activated Persulfate and Potassium Permanganate for Destruction of COCs

Plymouth Tube Chandler

August 15, 2017

Submitted to

Bruce Travers
Haley & Aldrich, Inc.
One Arizona Center
400 East Van Buren Street, Suite 545
Phoenix, Arizona 85004

Submitted by

PRIMA ENVIRONMENTAL INC.

5070 Robert J Mathews Parkway, Suite 300
El Dorado Hills, CA 95762

Cindy G. Schreier, Ph.D., President — Aug 15, 2017 **Date**

EXECUTIVE SUMMARY

Bench-scale treatability testing was conducted on soil (PT-6D) and groundwater (LB-7R)) from the Plymouth Tube site located in Chandler, Arizona to evaluate the suitability of activated persulfate and potassium permanganate ($KMnO_4$) for in situ chemical oxidation (ISCO) of chemicals of concern (COCs). The primary COCs at this site are 1,4-dioxane and trichloroethene (TCE). Two forms of activated persulfate were evaluated: alkaline activated persulfate (AP-pH) and iron activated persulfate (AP-Fe). Testing measured soil oxidant demand (SOD) for each oxidant, assessed the ability of each oxidant to remove COCs, and assessed the ability of soil to mitigate changes in pH associated with the use of activated persulfate.

Laboratory testing demonstrated that AP-pH, AP-Fe, and $KMnO_4$ can all destroy 1,4-dioxane and TCE, but the efficacy varied with oxidant and/or oxidant concentration. Low dose (1 g/L SP) AP-pH and AP-Fe tests destroyed 56-70% of 1,4-dioxane within 28 days and 17-60% TCE. In contrast, high dose tests (10 g/L SP), destroyed over 99% of 1,4-dioxane and TCE within 7 days. For $KMnO_4$, TCE was not detected in any sample, while 18% of 1,4-dioxane was destroyed within 28 days in the low dose (0.25 g/L $KMnO_4$) test and 43% was destroyed in the high dose test (1 g/L $KMnO_4$). In all tests, oxidant was still present at 28 days, indicating that additional COC removal would likely occur given a longer contact time.

Several non-target VOCs, including trihalomethanes and 1,1,2-trichloroethane, were detected in the high dose AP-Fe and both of the $KMnO_4$ tests, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 μg/L and were most likely present in untreated groundwater, but masked by high concentrations of non-target VOCs. Concentrations of some compounds were notably higher (up to 820 μg/L) in the AP-Fe tests. Such compounds are reactive intermediates and are expected to be destroyed given longer reaction times.

Treatment with AP-pH increased the pH to above 11, but the pH should return to near-pretreatment conditions once SP is consumed. Treatment with the high dose AP-Fe decreased pH to 2.2. Treatment with $KMnO_4$ did not affect pH.

Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil buffered between 1 and 10 mmol H^+/kg soil, implying that it can neutralize the acid generated by

decomposition of less than 1.2 g SP/kg soil. Soil also buffered between 10 and 100 mmol OH-/kg soil, indicating that more than 10 mmol OH-/kg soil (1.3 mL of 25% NaOH/kg soil) must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Based on the results of this study, PRIMA recommends that AP-pH or $KMnO_4$ be considered for use at this site. Both reacted with all COCs, though treatment of 1,4-dioxane will likely be faster using AP-pH. PRIMA suggests not using AP-Fe because this oxidant could potentially significantly reduce groundwater pH.

TABLE of CONTENTS

EXECUTIVE SUMMARY ..... **i**
List of Figures ..... **v**
List of Tables ..... **vi**
ACRONYMS and ABBREVIATIONS ..... **vii**
CHEMICAL FORMULAE ..... **viii**
1.0 INTRODUCTION **1**
1.1 Background 1
1.2 Study Objectives 2
2.0 MATERIALS and METHODS **4**
2.1 Materials 4
2.2 Preparation and Characterization of Soil and Groundwater 4
2.2.1 Soil 4
2.2.2 Groundwater 5
2.3 Initial NaOH Requirement 5
2.4 Soil Oxidant Demand / Persistence 5
2.4.1 $KMnO_4$ 5
2.4.2 Activated Persulfate 6
2.5 COC Oxidation / Secondary Effects 6
2.6 Long-Term Soil Buffering 6
2.7 Analytical Methods 8
2.8 Calculations 8
2.8.1 Theoretical Oxidant Demand due to COCs 8
2.8.2 SOD 9
2.8.3 Percent Removed/Destroyed 9
3.0 RESULTS and DISCUSSION **11**
3.1 Untreated Soil and Groundwater 11
3.2 SOD/Persistence 11
3.2.1 Alkaline Activated Persulfate SOD 11
3.2.2 $KMnO_4$ SOD 15
3.3 COC Removal 15
3.4 Secondary Parameters 19
3.5 Long-Term Soil Buffering 19
4.0 SUMMARY and CONCLUSIONS **24**

APPENDIX A (Chain of Custody)

APPENDIX B (Analytical Reports)

LIST of FIGURES

Figure 1. COC Removal Test – Day 28 7
Figure 2. AP-pH SOD. 13
Figure 3. AP-Fe SOD 14
Figure 4. $KMnO_4$ SOD. 16
Figure 5. Buffering Curves – Acid Range 22
Figure 6. Buffering Curves – Base Range 23

LIST of TABLES

Table 1. Theoretical Stoichiometric Dose Requirements 2
Table 2. Initial Conditions for COC Removal Tests 7
Table 3. Analytical Methods 8
Table 4. COCs and Secondary Parameters in Untreated Soil and Water. 12
Table 5. Theoretical Oxidant Demand due to COCs in Soil and Water 12
Table 6. Initial NaOH Requirement. 12
Table 7. COC Removal Results – COC Concentrations. 17
Table 8. COC Removal Results – Mass Balance. 18
Table 9. COC Removal - Secondary Parameters. 21

ACRONYMS and ABBREVIATIONS

AP-Fe	iron activated persulfate
AP-pH	alkaline activated persulfate
COCs	chemicals of concern
g	grams
kg	kilograms
L	liters
mg	milligrams
mL	milliliters
mmol	millimoles
mV	millivolts
µg	micrograms
ORP	oxidation reduction potential
SOD	soil oxidant demand
SP	sodium persulfate
TCE	trichloroethene
TOC	total organic carbon
VOCs	volatile organic compounds

CHEMICAL FORMULAE

C_2HCl_3	trichloroethene
$C_4H_8O_2$	1,4-dioxane
CO_2	carbon dioxide
H^+	acid/proton
H_2O	water
$KMnO_4$	potassium permanganate
MnO_2	manganese dioxide
Na^+	sodium ion
NaOH	sodium hydroxide
$Na_2S_2O_8$	sodium persulfate
OH^-	hydroxide ion
SO_4^{2-}	sulfate

1.0 INTRODUCTION

Bench-scale treatability testing was conducted on soil (PT-6D) and groundwater (LB-7R) from the Plymouth Tube site located in Chandler, Arizona to evaluate the suitability of activated persulfate and potassium permanganate ($KMnO_4$) for in situ chemical oxidation (ISCO) of chemicals of concern (COCs). The primary COCs at this site are 1,4-dioxane and trichloroethene (TCE). Two forms of activated persulfate were evaluated: alkaline activated persulfate (AP-pH) and iron activated persulfate (AP-Fe).

1.1 Background

Sodium Persulfate. Sodium persulfate (SP) is an established technology for the oxidation of a wide range of organic compounds, including site COCs. SP is commonly activated by high pH, ferrous iron, chelated iron or hydrogen peroxide (HP) in order to generate the persulfate radical. **Equations 1** and **2** show theoretical reactions for conversion of primary COCs to carbon dioxide (CO_2) and water (H_2O) by sodium persulfate ($Na_2S_2O_8$). The stoichiometric persulfate requirements based on these reactions are given in **Table 1**. SP requirements are expected to be similar for activated persulfate. In practice, a greater-than-stoichiometric dose of SP will usually be required because SP is a non-selective oxidant that will react with natural organic matter and other non-target compounds and because SP may naturally decompose.

$$3Na_2S_2O_8 + \underset{TCE}{C_2HCl_3} + 4H_2O \rightarrow 2CO_2 + 6SO_4^{2-} + 6Na^+ + 9H^+ + 3Cl^- \qquad \text{Eqn. 1}$$

$$10Na_2S_2O_8 + \underset{1,4\text{-}dioxane}{C_4H_8O_2} + 6H_2O \rightarrow 4CO_2 + 20SO_4^{2-} + 20Na^+ + 20H^+ \qquad \text{Eqn. 2}$$

Persulfate decomposes to generate sulfuric acid. The change in sulfate concentration and the effect on pH will depend upon the amount of persulfate used, the rate at which it decomposes, the presence of cations that can precipitate sulfate, and the buffering ability of site soil and groundwater. Other potential secondary effects include oxidation of soil-bound chromium to Cr(VI) and mobilization of metals due to changes in pH. The magnitude, duration, and significance of any such affects are site specific.

Table 1. Theoretical Stoichiometric Dose Requirements.

COC	g SP/g COC	g $KMnO_4$/g COC
Trichloroethene	5.4	2.4
1,4-Dioxane	27	12.5*

* Reactivity uncertain.

Potassium Permanganate. Injection of $KMnO_4$ is an established technology for the *in situ* oxidation of chlorinated ethenes. It may also react slowly with 1, 4-dioxane. The theoretical chemical reactions for the oxidation of TCE and 1,4-dioxane by $KMnO_4$ are given in **Equations 3** and **4**. The stoichiometric dose requirements are shown in **Table 1**. In practice, a greater-than-stoichiometric dose of $KMnO_4$ may be required because $KMnO_4$ is a non-selective oxidant that can react with natural organic matter and other non-target compounds in soil and water.

$$2KMnO_4 + \underset{TCE}{C_2HCl_3} + \rightarrow 2CO_2 + 2MnO_2 + H^+ + 2K^+ + 3Cl^- \qquad \text{Eqn. 3}$$

$$20KMnO_4 + \underset{1,4\text{-}dioxane}{3C_4H_8O_2} + 20H^+ \overset{?}{\rightarrow} 12CO_2 + 20MnO_2 + 22H_2O + 20K^+ \qquad \text{Eqn. 4}$$

Treatment of soil and groundwater with $KMnO_4$ may affect secondary water quality. The most common effect is an increase in the aqueous concentration of Cr(VI). Cr(VI) is a natural impurity in permanganate; in addition, both $KMnO_4$ and its by-product, manganese dioxide (MnO_2), are known to oxidize soil chromium to water soluble Cr(VI). The amount of Cr(VI) formed, if any, and its ability to attenuate, are site-specific.

1.2 Study Objectives

Batch tests were conducted to evaluate AP-pH, AP-Fe and $KMnO_4$. Specific goals were to:

- measure the initial base requirement of soil and groundwater.
- measure the soil oxidant demand/persistence for each oxidant.
- assess COC destruction by each oxidant.

- estimate the minimum aqueous SP or $KMnO_4$ concentration needed to achieve COC destruction.
- evaluate the effect of each treatment on secondary water quality parameters such as pH.
- assess the ability of soil to buffer changes in pH associated with the use of activated persulfate.

The specific tests conducted to achieve these goals are described in **Section 2.0** of this report. Results and Summary/Conclusions are presented in **Sections 3.0 and 4.0**, respectively.

2.0 MATERIALS and METHODS

2.1 Materials

Iron EDTA, Fe EDTA. Dissolve® brand iron ethylenediaminetetraacetic acid (Fe-EDTA) was obtained from Peroxychem (www.peroxychem.com). Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Potassium Permanganate, $KMnO_4$. RemOx brand $KMnO_4$ was obtained from Carus (www.caruscorporation.com)**.** Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Sodium Hydroxide, NaOH. Reagent grade NaOH was used in this study. Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

Sodium Persulfate, SP. Klozur® brand SP was obtained from Peroxychem (www.peroxychem.com). Stock solutions were prepared as needed by dissolving the appropriate amount of solid material in DI water.

2.2 Preparation and Characterization of Soil and Groundwater

2.2.1 Soil

One soil sample (PT-6D) consisting of 2 five gallon buckets was received on May 25, 2017 (see **Appendix A** for chain of custody). Bulk soil was a mixture of sand with some silt and many rocks ranging in size from pea gravel to about 5 inches in diameter. Soil from one bucket was used in this study. Prior to testing, it was homogenized by passing it through a No. 4 sieve to remove particles greater than 3/16 inches then mixing by hand until it was visually homogeneous. The mass passing the 4 mesh sieve was 14.8 kg, while the mass retained was 17.4 kg. Soil passing the 4 mesh sieve (hereafter referred to as “soil”) was analyzed for:

- COCs
    - 1,4-dioxane

    - Volatile Organic Compounds (VOCs)
- Total manganese
- Total Organic Carbon (TOC)

2.2.2 Groundwater

One groundwater sample (LB-7R), consisting of twenty 1 L amber bottles, was received on May 25, 2017 (see **Appendix A** for chain of custody). The water was stored in a refrigerator (4° Celsius) until needed. Prior to testing, water was homogenized by pumping chilled water from each bottle into a large Tedlar bag, mixing, then pumping the water back into the amber bottles. Homogenized groundwater was clear and colorless. It was analyzed for:

- COCs
    - 1,4-dioxane
    - VOCs
- Alkalinity
- Dissolved manganese
- Oxidation Reduction Potential (ORP)
- pH
- Sulfate

2.3 Initial NaOH Requirement

The amount of NaOH needed to overcome the initial buffering capacity of soil and of groundwater was measured. Dilute NaOH was added to soil or groundwater and until the pH reached 11. Additional NaOH was added as needed until the pH remained near 11 for 60 consecutive minutes. This information was used to set the amount of NaOH for AP-pH tests.

2.4 Soil Oxidant Demand / Persistence

2.4.1 $KMnO_4$

The $KMnO_4$ SOD was measured over time. Three series of five vials each containing 20 grams homogenized soil and 20 mL $KMnO_4$ solution ($KMnO_4$ dissolved in deionized water) were prepared. Each series contained a different dose of $KMnO_4$: 250 milligrams per liter (mg/L) (250 milligrams per kilogram [mg/kg]), 990 mg/L (990 mg/kg), and 2,500 mg/L (2,500 mg/kg). The vials were placed on a shaker table. Periodically, at approximately 6 hours, 1 day, 2 days, 8 days, and 15 days, one vial from each series was destructively sampled and the aqueous phase analyzed for residual permanganate. SOD was calculated as described in **Section 2.8.2.**

2.4.2 Activated Persulfate

SOD/oxidant persistence was measured for AP-pH and AP-Fe. For each oxidant, two series of reactors (low dose and high dose) comprised of four replicates were prepared. Each reactor contained 60 g soil, 60 mL of activated persulfate solution, such that the initial SP concentration was approximately 5 grams per liter (g/L) in the low dose tests and 15 g/L in the high dose tests. For AP-pH, the amount of NaOH was a 2:1 mole ratio of NaOH:SP, plus the initial NaOH requirement measured in **Section 2.3**. Reactors were shaken continuously. One replicate from each series was destructively sampled at 2, 4, 8 and 21 days, and analyzed for residual SP. SOD was calculated as described in **Section 2.8.2**.

2.5 COC Oxidation / Secondary Effects

Batch tests were conducted to evaluate COC removal and assess the effect of treatment on selected secondary parameters. Fifteen (15) reactors were prepared by combining 317 g soil, 900 milliliter (mL) groundwater, and 50 mL total of SP stock solution, $KMnO_4$ stock solution, and deionized (DI) water as appropriate to give the initial conditions shown in **Table 2** with a soil to liquid ratio of 1:3. Reactors were stored at room temperature (20°C) in the dark. At the times specified in **Table 2**, the reactors were destructively sampled and the water phases were analyzed for VOCs, 1,4-dioxane, chloride, dissolved metals (iron, manganese), ORP, pH and residual oxidant (if appropriate). Soil was not analyzed for COCs because neither 1,4-dioxane nor VOCs would be expected to sorb strongly to soil under the conditions of the test. **Figure 1** shows the reactors immediately prior to sampling at Day 28.

2.6 Long-Term Soil Buffering

Soil buffering curves were generated to estimate the amount of acid (generated by decomposition of SP) and the amount of base (needed for AP-pH activation) that can be neutralized by soil over the long-term. Soil and dilute sulfuric acid or dilute NaOH were combined in a 1:1 soil to liquid ratio. The pH was measured periodically for 14 days.

Table 2. Initial Conditions for COC Removal Tests

Test	# Reps	Initial SP	Initial $KMnO_4$	Activator	Sample Time
		g/L	g/L		days
Time 0	1	0	0	n/a	0
Control	2	0	0	n/a	7, 28
AP-pH Low	2	1	0	pH > 11	
AP-pH High	2	10	0		
AP-Fe Low	2	1	0	150 mg/L Fe	
AP-Fe High	2	10	0		
KMnO4 Low	2	0	0.25	n/a	
KMnO4 High	2	0	1	n/a	

n/a = not applicable

Figure 1. COC Removal Test – Day 28 *From left*: Control, AP-pH Low, AP-pH High, AP-Fe Low, AP-Fe High, $KMnO_4$ Low, $KMnO_4$ High.

2.7 Analytical Methods

The methods for each analysis and the laboratory that performed the analyses are summarized in **Table 3**.

Table 3. Analytical Methods.

Analyte	Method	Lab performing test*
1,4-Dioxane	EPA 8260-SIM	McCampbell
VOCs	EPA 8260	Alpha Analytical
Alkalinity	SM2320B	Alpha Analytical
Chloride	EPA 300	Alpha Analytical
Metals (total or dissolved)	EPA 6020	Alpha Analytical
ORP	Probe	PRIMA
pH	Probe	PRIMA
Residual permanganate	Visible spectroscopy	PRIMA
Residual persulfate	FAS/KMnO4 titration	PRIMA
Sulfate	Hach**	PRIMA
TOC	EPA 9060	McCampbell

* Alpha Analytical (Sparks, NV); McCampbell Analytical (Pittsburg, CA)
** Hach DR2800 spectrophotometer and appropriate Hach test reagents.

2.8 Calculations

2.8.1 Theoretical Oxidant Demand due to COCs

The theoretical amount of oxidant needed to convert a COC to carbon dioxide and water is the concentration of the COC in the matrix (soil or water, see **Section 3.1**) times the stochiometric requirement **(Table 1)**. The total theoretical demand is the sum of the individual COC demands, as shown in **Equation 5**.

$$OD_{COCs} = \sum_{1}^{i} COC_i \; x \; SR_i$$

Eqn. 5

where

- OD_{COCs} is total theoretical oxidant demand due to COCs, in g/kg for soil or g/L for water
- $[COC]_i$ is concentration of *i*th COC in matrix, in g/kg for soil or g/L for water
- SR_i is the stoichiometric oxidant requirement (g oxidant / g COC) of the *i*th COC based on theoretical equations for conversion of the COC to CO_2.

2.8.2 SOD

SOD was calculated according to **Equation 6**.

$$SOD = ([Ox]_{init} - [Ox]_t) \; x \; (V/M)$$

Eqn. 6

where

- SOD is soil oxidant demand, in g (or mg) oxidant/kg soil
- $[Ox]_{init}$ is the initial concentration of oxidant, in g (or mg) oxidant/L
- $[Ox]_t$ is the concentration of oxidant at time, t, in g (or mg) oxidant/L
- V is total volume of the aqueous phase, in L
- M is mass of soil, in kg

2.8.3 Percent Removed/Destroyed

For the COC Removal tests, the percent remaining and destroyed were calculated by comparing the mass of each COC in the test reactor to the mass in the Time 0 reactor according to **Equations 7** and **8**. Concentrations in soil are assumed to be negligible.

$$\% \text{ Remaining in Aqueous} = 100 \; x \; (C_{aq}V_{aq})/(C_{aq,T0}V_{aq})$$

Eqn. 7

$$\% \text{ Destroyed} = 100 - \% \text{ Remaining in Aqueous}$$

Eqn. 8

where

- C_{aq} is the aqueous concentration (μg/L) in the control or test,
- $C_{aq,T0}$ is the aqueous concentration (μg/L) in the time 0 sample
- V_{aq} is the aqueous volume (L) of the control or test

3.0 RESULTS and DISCUSSION

3.1 Untreated Soil and Groundwater

The concentrations of COCs in soil and groundwater are shown in **Table 4**. Complete analytical reports are provided in **Appendix B**. The only detectable COCs in water were TCE (12,000 microgram per liter [μg/L]) and 1,4-dioxane (1,300 μg/L). No COCs were detected in soil. The theoretical oxidant demand of soil or water due to these COCs is given in **Table 5**. The demands are low – up to 1.2 mg oxidant/kg soil for the soils and 1.6-180 mg oxidant/L for the waters. In practice, more oxidant will likely be needed due to reactions with non-target compounds and/or decomposition of the oxidant.

Secondary parameters in soil and water are also provided in **Table 5**. Groundwater alkalinity was 360 mg/L as calcium carbonate ($CaCO_3$), ORP was 208 millivolt (mV), pH was 6.93 and sulfate was 34 mg/L. Soil did not contain measurable TOC.

The initial NaOH requirement for soil and groundwater is given in **Table 6**. The amount of NaOH needed to increase pH to 11 is 0.013 mol OH^-/kg soil (1.6 mL 25%NaOH/kg soil) for soil and 0.012 mol OH^-/L GW (1.5 mL 25%NaOH/L GW) for groundwater.

3.2 SOD/Persistence

3.2.1 Activated Persulfate SOD

Results from the AP-pH and AP-Fe SOD / persistence tests are shown in **Figures 2** and **3**, respectively. For AP-pH, the 21-day SOD was 0.6 g SP/kg soil when the initial SP concentration was 5 g/L and 2.0 g SP/kg soil when the initial SP concentration was 15 g SP/kg soil. For AP-Fe, the SOD was 1.2 g SP/kg soil when the initial SP concentration was 5 g/L and 5.0 g SP/kg soil when the initial SP concentration was 15 g SP/kg soil. Increased SOD with higher initial concentration of SP is a common phenomenon.

Table 4. COCs and Secondary Parameters in Untreated Soil and Water.

Analyte	Units	Untreated Soil	Untreated GW
COCs			
1,4-dioxane	mg/kg or µg/L	< 0.020	1,300
vinyl chloride	µg/kg or µg/L	< 20	< 80
1,1-dichloroethene	µg/kg or µg/L	< 20	690
cis-dichloroethene	µg/kg or µg/L	< 20	< 80
trichloroethene	µg/kg or µg/L	< 20	12,000
tetrachloroethene	µg/kg or µg/L	< 20	< 80
*Metals**			
Manganese	mg/L	180	0.059
Other Parameters			
Alkalinity	mg/L	n.m.	360
ORP	mV	n.m.	208
pH	mg/L	n.m.	6.93
Sulfate	mg/L	n.m.	34
TOC	mg/kg	< 610	n.m.

* Total metals in soil, dissolved metals in water

n.m. = not measured

Table 5. Theoretical Oxidant Demand due to COCs in Soil and Water.

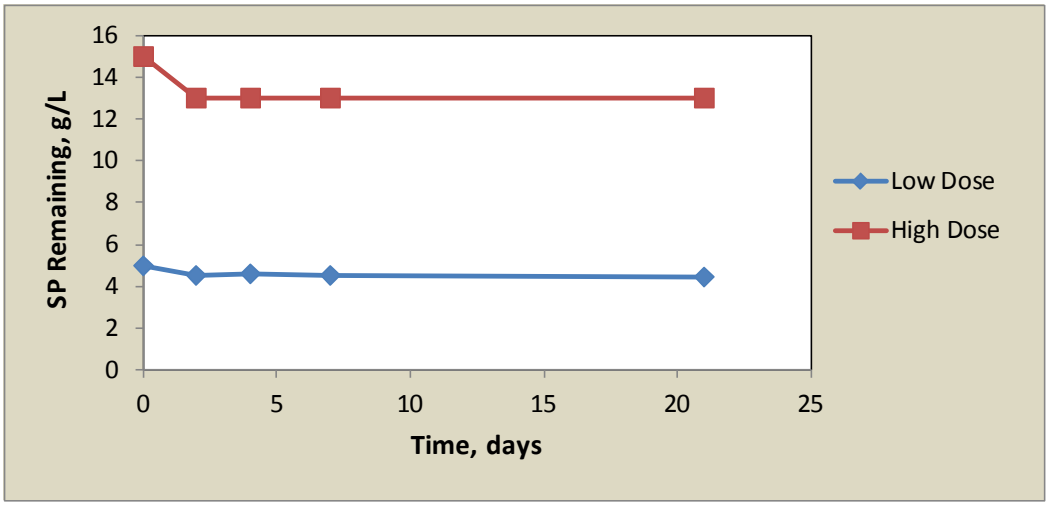
Sample	Units	Oxidant	
		SP	KMnO4
Untreated Soil	mg oxidant / kg soil	0	0
Untreated GW	mg oxidant / L GW	110	48

Table 6. Initial NaOH Requirement.

Sample	NaOH Requirement			
	moles OH^-/kg	mL 25% NaOH/kg	moles OH^-/L	mL 25% NaOH/L
Soil	0.013	1.6		
Groundwater			0.012	1.5

Time, Days	SP Remaining, g/L Soln.		SP Consumed, g/kg Soil	
	Low Dose	High Dose	Low Dose	High Dose
0	5.0	15	0	0
2	4.5	13	0.5	2.0
4	4.6	13	0.4	2.0
7	4.5	13	0.5	2.0
21	4.4	13.0	0.6	2.0

Note: SP = sodium persulfate



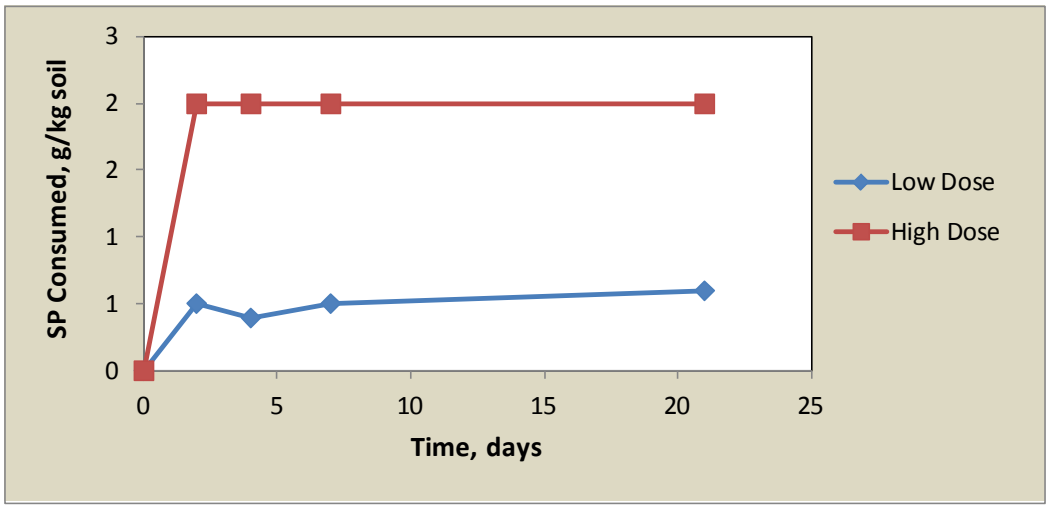
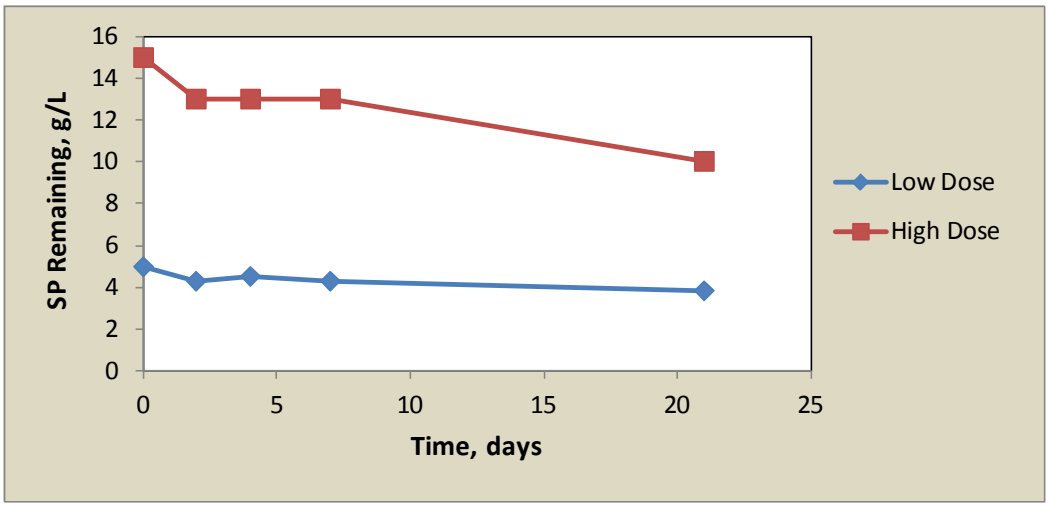


Figure 2. AP-pH SOD.

Time, Days	SP Remaining, g/L Soln.		SP Consumed, g/kg Soil	
	Low Dose	High Dose	Low Dose	High Dose
0	5.0	15	0	0
2	4.3	13	0.7	2.0
4	4.5	13	0.5	2.0
7	4.3	13	0.7	2.0
21	3.8	10.0	1.2	5.0

Note: SP = sodium persulfate



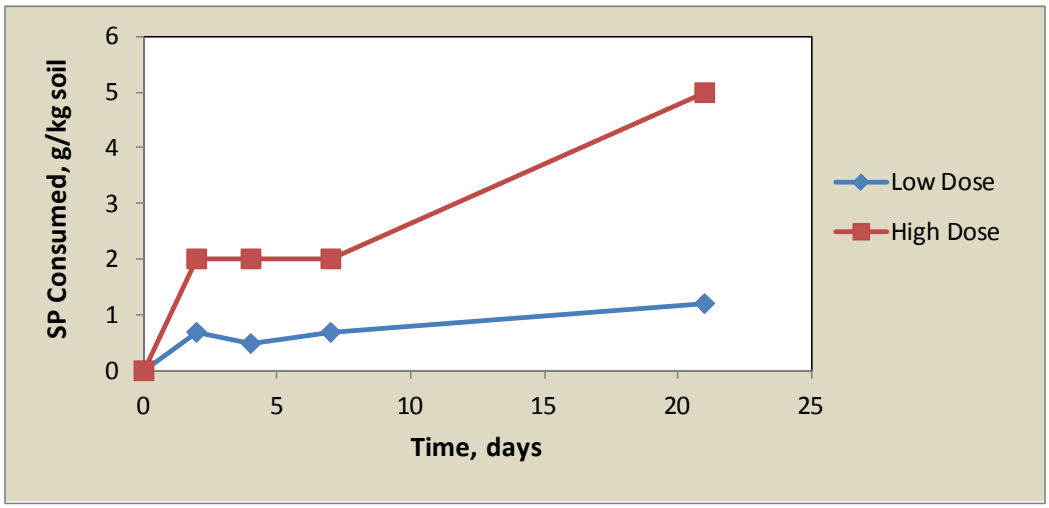


Figure 3. AP-Fe SOD.

3.2.2 $KMnO_4$ SOD

Results from the $KMnO_4$ soil oxidant demand / persistence tests are shown in **Figure 4**. The SOD was low, ranging from 45-280 mg $KMnO_4$/kg soil. In both cases, the SOD was higher when the initial concentration of $KMnO_4$ was higher, which is a common phenomenon.

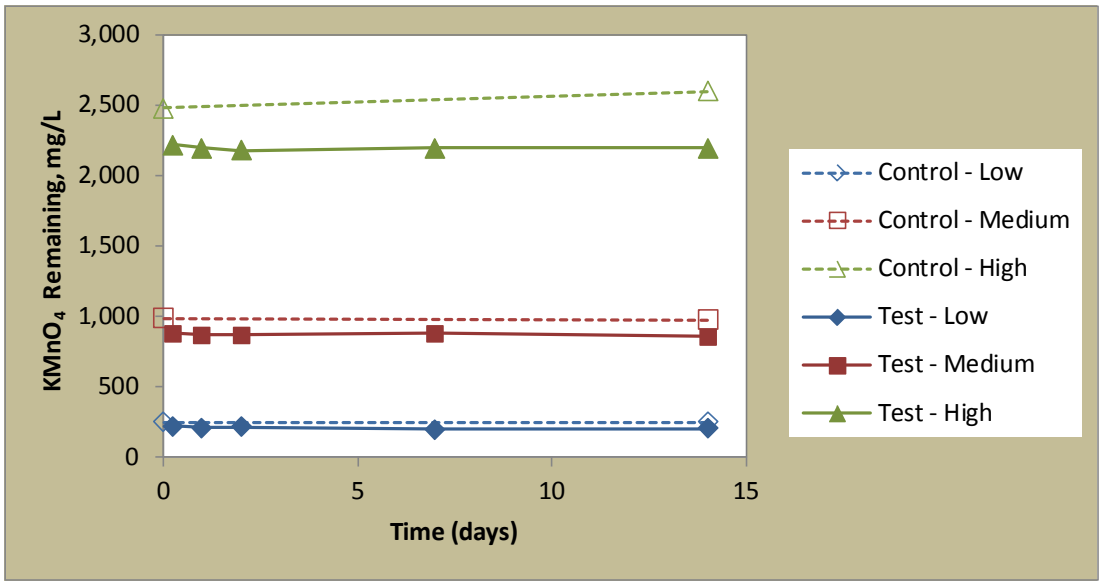
3.3 COC Removal

The concentrations of COCs from the COC Removal tests and the mass balances relative to the Time 0 are shown in **Tables 7** and **8**, respectively. Complete analytical reports are included in **Appendix B**.

All treatments decreased concentrations of all COCs in the time frame of the study, but some treatments were more effective than others. Low dose (1 g/L SP) AP-pH decreased the concentration of 1,4-dioxane from 1,000 µg/L at Time 0 to 300 µg/L by Day 28, while the high dose (10 g/L) test decreased the concentration to below the reporting limit of 0.5 µg/L within 7 days. AP-Fe behaved similarly, with the low dose (1 g SP/L) decreasing 1,4-dioxane to 440 µg/L by Day 28 and the high dose (10 g SP/L) to < 7.2 µg/L. The low dose (0.25 g/L $KMnO_4$) $KMnO_4$ test decreased the concentration to 820 µg/L, but this was the similar to the concentration seen in the control test. In contrast, the high dose (1 g/L $KMnO_4$) $KMnO_4$ test decreased 1,4-dioxane to 570 µg/L by 28 days. TCE decreased from 7,200 mg/L at Time 0 to 2,900 mg/L by Day 28 in the AP-pH low dose test and to 6,000 mg/L in the AP-Fe low dose test. It was not detected in the AP-pH high dose, the AP-Fe high dose test or any of the $KMnO_4$ tests. 1,1-DCE was detected in the Time 0 and Control samples, but not in any other sample. Oxidant was present in all reactors at Day 28, indicating that additional oxidation could occur given longer reaction times.

Several non-target VOCs were detected in the high dose AP-Fe and both of the $KMnO_4$ tests. These include 1,1-dichloroethane, 1,2-dichloroethane, chloromethane, dibromochloromethane, chloroform, bromodichloromethane, and 1,1,2-trichloroethane, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 µg/L for each analyte and were most likely present in untreated

Time (day)	$KMnO_4$ Remaining, mg/L soln.						$KMnO_4$ Consumed mg/kg soil		
	Control - Low	Control - Medium	Control - High	Test - Low	Test - Medium	Test - High	Test - Low	Test - Medium	Test - High
0	250	990	2,480						
0.25				222	880	2,220	28	110	260
1				212	870	2,200	38	120	280
2				220	870	2,180	30	120	300
7				203	880	2,200	47	110	280
14	250	980	2,600	205	860	2,200	45	130	280



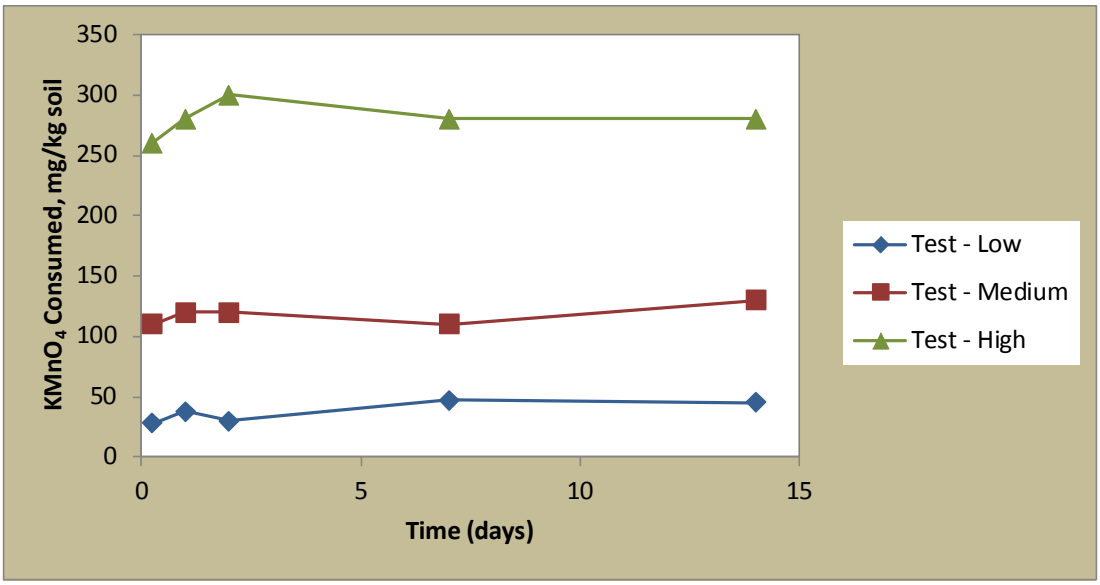


Figure 4. $KMnO_4$ SOD.

Table 7. COC Removal Results – COC Concentrations.

Analyte	Units	Test														
		Time 0	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
			7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Primary COCs																
1,4-dioxane	µg/L	1,000	820	880	590	300	< 0.50	< 0.50	220	440	38	7.2	870	820	820	570
vinyl chloride	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/L	410	400	390	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-dichloroethene	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
trichloroethene	µg/L	7,200	9,500	7,300	6,100	2,900	52	< 1.0	6,800	6000	< 2.0	12	< 1.0	< 1.0	< 1.0	< 1.0
tetrachloroethene	µg/L	< 100	< 50	< 100	< 40	< 40	1.1	< 1.0	< 50	< 80	< 2.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0
Other VOCs																
Acetone	µg/L	< 2,000	< 1,000	< 2,000	< 800	< 800	23	20	< 1,000	< 1,600	45	< 100	< 20	< 20	18	< 20
1,1-dichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	3.1	< 5.0	3.5	3.1	3.9	3.0
1,2-dichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	2.2	< 5.0	2.4	1.9	2.4	1.7
Chloromethane	µg/L	< 400	< 200	< 400	< 160	< 160	< 4.0	< 4.0	< 200	< 320	< 8.0	35	< 4.0	< 4.0	< 4.0	< 4.0
Dichloromethane	µg/L	< 400	< 200	< 400	< 160	< 160	< 4.0	< 4.0	< 200	< 320	< 8.0	820	< 4.0	< 4.0	< 4.0	< 4.0
Chloroform	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	16	250	3.0	2.5	3.5	2.3
Bromodichloromethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	< 2.0	40	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/L	< 100	< 50	< 100	< 40	< 40	< 1.0	< 1.0	< 50	< 80	2.2	9.7	2.8	2.0	2.6	1.8

Table 8. COC Removal Results – Mass Balance.

Analyte	Test													
	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Percent Remaining (Relative to Time 0)														
1,4-dioxane	82	88	59	30	< 0.05	< 0.05	22	44	4	1	87	82	82	57
1,1-dichloroethene	98	95	< 10	< 10	< 0.2	< 0.2	< 12	< 20	< 0.5	< 1.2	< 0.2	< 0.2	< 0.2	< 0.2
trichloroethene	132	101	85	40	0.7	< 0.01	94	83	< 0.03	0	< 0.01	< 0.01	< 0.01	< 0.01
Percent Destroyed (Relative to Time 0)														
1,4-dioxane	18	12	41	70	> 99.95	> 99.95	78	56	96	99	13	18	18	43
1,1-dichloroethene	2.4	4.9	> 90	> 90	> 99.8	> 99.8	> 88	> 80	> 99.5	> 98	> 99.8	> 99.8	> 99.8	> 99.8
trichloroethene	-32	-1	15	60	99	> 99.99	5.6	17	> 99.97	99.8	> 99.99	> 99.99	> 99.99	> 99.99

groundwater but masked due to high concentrations of TCE. Concentrations were notably higher in the AP-Fe test, with chloroform present at 250 μg/L and dichloromethane present at 820 μg/L. It is likely that these compounds are reactive intermediates (formation of trihalomethanes by activated persulfate is known to occur) and that concentrations would have declined given a longer reaction time since SP was still present at 28 days (see **Section 3.4**).

3.4 Secondary Parameters

The effect of each oxidant on selected secondary water quality parameters is shown in **Table 9**. Chloride concentration did not change appreciably, ranging 640 mg/L and 680 mg/L. The variation was too great to confirm complete dechlorination of TCE, which would have increased the concentration of chloride by approximately 6 mg/L. ORP was elevated in the AP-Fe and $KMnO_4$ tests as expected due to the presence of oxidant. It was not elevated in the AP-pH tests despite the presence of SP due to matrix interference (high pH can bias ORP measurement low). The pH behaved as expected. It was elevated (above pH 11) in the AP-pH tests and unaffected in the low dose AP-Fe tests and the $KMnO_4$ tests. pH decreased to 2.2 by Day 28 in the AP-Fe high dose test due to decomposition of SP. None of the oxidants were significantly consumed over the course of the study with the exception of SP in the high dose AP-Fe test. By Day 28, over 90% of SP was still present in the AP-pH and low dose AP-Fe tests and over 87% of $KMnO_4$ was still present. In the high dose AP-Fe test, 40% of the SP was still present. Sulfate increased in the activated persulfate tests. The increase was small in most cases with sulfate increasing from 200 mg/L at Time 0 to up to 530 mg/L in the AP-pH tests and up to 340 mg/L in the low dose AP-Fe test. Sulfate increased to 4,300 mg/L in the high dose AP-Fe test. The increases were due to decomposition of SP.

3.5 Long-Term Soil Buffering

Buffering curves for acid and base ranges are presented in **Figures 5** and **6**, respectively. Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil neutralized 1 mmol H^+/kg soil, increasing the pH from 2.8 at Time 0 to 8.4 within 6 days, but when 10 mmol H^+/kg soil was added to soil, the pH rose from 2.1 at Time 0 to 5.0 by Day 13. For reference, 10 mmoles H^+ is the amount of acid that can be generated by decomposition of 1.2 g SP since SP decomposes to generate 2 moles H^+/mole SP = 8.4

mmoles H^+/g SP). In tests using base, soil reduced the pH from 11.9 to 10.2 within 2 days when exposed to 10 mmol OH^-/kg soil, but only reduced the pH from 13 to 12.6 within 12 days when exposed to 100 mmol OH^-/kg soil. Since alkaline activation of persulfate requires pH above about 11, more than 10 mmol OH-/kg soil must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Table 9. COC Removal Results - Secondary Parameters.

Analyte	Units	Test														
		Time 0	Process Control		AP-pH (1 g/L)		AP-pH (10 g/L)		AP-Fe (1 g/L)		AP-Fe (10 g/L)		KMnO4 (0.25 g/L)		KMnO4 (1 g/L)	
			7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days	7 days	28 days
Chloride	mg/L	670	640	650	650	670	650	680	650	660	650	660	650	650	660	670
Dissolved Metals																
Iron	mg/L	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	< 0.60	150	140	140	110	< 0.60	< 0.60	< 0.6	< 0.60
Manganese	mg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.10	< 0.01	0.019	0.02	0.3	0.036	3.1	71	71	280	290
ORP	mV	76	215	186	72	30	42	132	190	252	305	624	616	565	632	595
pH	--	7.3	7.3	7.3	11.5	11.5	12.6	12.7	7.1	6.9	6.3	2.2	7.2	7.2	7.2	7.2
Residual Permanganate	mg/L KMnO4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	218	212	950	950
Residual Persulfate	g/L SP	n.a.	n.a.	n.a.	0.9	1.0	9.5	9.5	0.9	0.9	8.6	4.0	n.a.	n.a.	n.a.	n.a.
Sulfate	mg/L	200	220	300	240	360	380	530	300	340	680	4,300	n.m.	n.m.	n.m.	n.m.

n.a. = not applicable

n.m. = not measured

Time (days)	0	0.01	1	2	3	5	6	12	13
None (DI Control)	-	9.1	9.0	8.9		9.0		8.8	
100 mmol H+/kg soil (pH 1)	1.4	1.3	1.6	1.9	1.8		2.1		2.3
10 mmol H+/kg soil (pH 2)	2.1	3.0	4.1	4.5	4.5		4.6		5.0
1 mmol H+/kg soil (pH 3)	2.8	7.0	8.5	8.5	8.3		8.4		

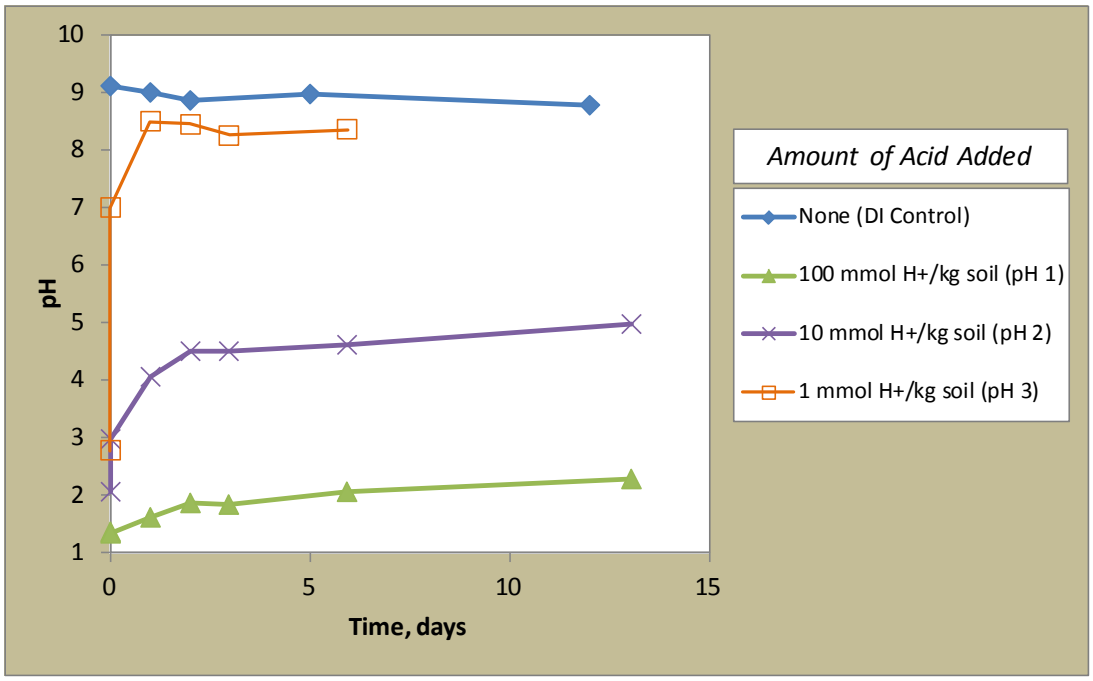


Figure 5. Buffering Curves – Acid Range.

Time (days)	0	0.01	1	2	5	12
None (DI Control)		9.1	9.0	8.9	9.0	8.8
100 mmol OH-/kg soil (pH 13)	13.0	12.5	12.6	12.4	12.6	12.6
10 mmol OH-/kg soil (pH 12)	11.9	10.9	10.5	10.2	10.1	10.2
1 mmol OH-/kg soil (pH 11)	10.6	9.6	9.4	9.2	9.3	9.2

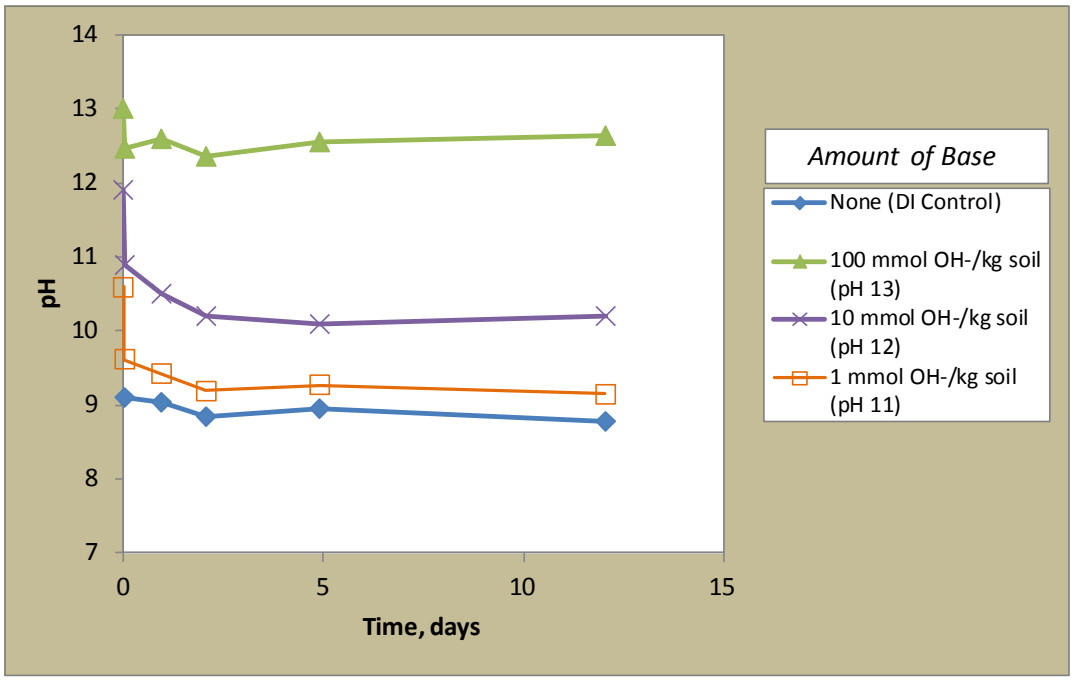


Figure 6. Buffering Curves – Base Range.

4.0 SUMMARY and CONCLUSIONS

Laboratory testing demonstrated that both AP-pH, AP-Fe, and $KMnO_4$ can destroy 1,4-dioxane and TCE, but the efficacy varied with oxidant and/or oxidant concentration. Low dose (1 g/L SP) AP-pH and AP-Fe tests destroyed 56-70% of 1,4-dioxane within 28 days and 17-60% TCE. In contrast, high dose tests (10 g/L SP), destroyed over 99% of 1,4-dioxane and TCE within 7 days. For $KMnO_4$, TCE was not detected in any sample, while 18% of 1,4-dioxane was destroyed within 28 days in the low dose (0.25 g/L $KMnO_4$) test and 43% was destroyed in the high dose test (1 g/L $KMnO_4$). In all tests, oxidant was still present at 28 days, indicating that additional treatment would likely occur given a longer contact time.

Several non-target VOCs, including trihalomethanes and 1,1,2-trichloroethane, were detected in the high dose AP-Fe and both of the $KMnO_4$ tests, though not all compounds were seen in all cases. Concentrations in the $KMnO_4$ tests were below 5 μg/L and were most likely present in untreated groundwater, but masked by high concentrations of non-target VOCs. Concentrations of some compounds were notably higher (up to 820 μg/L) in the AP-Fe tests. Such compounds are reactive intermediates and are expected to be destroyed given longer reaction times.

Treatment with AP-pH increased the pH to above 11, but the pH should return to near-pretreatment conditions once SP is consumed. Treatment with the high dose AP-Fe decreased pH to 2.2. Treatment with $KMnO_4$ did not affect pH.

Soil had a mild ability to buffer acid and moderate ability to buffer base. Soil buffered between 1 and 10 mmol H^+/kg soil, implying that it can neutralize the acid generated by decomposition of less than 1.2 g SP/kg soil. Soil also buffered between 10 and 100 mmol OH-/kg soil, indicating that more than 10 mmol OH-/kg soil (1.3 mL of 25% NaOH/kg soil) must be added if using AP-pH to ensure that the pH remains elevated for a prolonged period.

Based on the results of this study, PRIMA recommends that AP-pH or $KMnO_4$ be considered for use at this site. Both reacted with all COCs, though treatment of 1,4-

dioxane will likely be faster using AP-pH. PRIMA suggests not using AP-Fe because this oxidant could potentially significantly reduce groundwater pH.

APPENDIX A
(Chain of Custody)

APPENDIX B
(Analytical Reports)

Alpha Analytical, Inc
255 Glendale Ave, #21
Sparks, Nevada 89431
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Website: www.alpha-analytical.com

June 07, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: H&A-Chandler

Order No.: PES1706003

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

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#: **PES1706003**
Report Date: **6/7/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 12:30:00 PM
Project: H&A-Chandler
Lab ID: 1706003-01
Matrix: AQUEOUS
Client Sample ID HA-Ch-GW

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloromethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
Vinyl chloride	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Bromomethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Acetone	ND	1600		µg/L	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethene	690	80		µg/L	6/2/2017	VOCs by EPA 8260
Dichloromethane	ND	320		µg/L	6/2/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chloroform	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Benzene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Trichloroethene	12000	80		µg/L	6/2/2017	VOCs by EPA 8260
Bromodichloromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Toluene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
Dibromochloromethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Tetrachloroethene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Chlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Ethylbenzene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
m,p-Xylene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
Bromoform	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
o-Xylene	ND	40		µg/L	6/2/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	80		µg/L	6/2/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: Toluene-d8	103	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	6/2/2017	VOCs by EPA 8260

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

Alpha Analytical, Inc.

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1706003**
Report Date: **6/7/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 3:30:00 PM
Project: H&A-Chandler
Lab ID: 1706003-02
Matrix: SOIL
Client Sample ID HA-Ch-SO

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloromethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
Vinyl chloride	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromomethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Acetone	ND	200		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Dichloromethane	ND	40		µg/Kg	6/2/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chloroform	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Benzene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Trichloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromodichloromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Toluene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
Dibromochloromethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Tetrachloroethene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Chlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Ethylbenzene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
m,p-Xylene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
Bromoform	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
o-Xylene	ND	5		µg/Kg	6/2/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	20		µg/Kg	6/2/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	98	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: Toluene-d8	103	70-130		%Rec	6/2/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	6/2/2017	VOCs by EPA 8260

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QC SUMMARY REPORT

WO#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **MB-1372** SampType: **MBLK** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/1/2017** RunNo: **888**
Client ID: **PBS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/1/2017** SeqNo: **22197**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	40									
Vinyl chloride	ND	20									
Chloroethane	ND	20									
Bromomethane	ND	40									
Trichlorofluoromethane	ND	20									
Acetone	ND	200									
1,1-Dichloroethene	ND	20									
Dichloromethane	ND	40									
trans-1,2-Dichloroethene	ND	20									
1,1-Dichloroethane	ND	20									
cis-1,2-Dichloroethene	ND	20									
Chloroform	ND	20									
1,2-Dichloroethane	ND	20									
1,1,1-Trichloroethane	ND	20									
Carbon tetrachloride	ND	20									
Benzene	ND	5									
1,2-Dichloropropane	ND	20									
Trichloroethene	ND	20									
Bromodichloromethane	ND	20									
cis-1,3-Dichloropropene	ND	20									
trans-1,3-Dichloropropene	ND	20									
1,1,2-Trichloroethane	ND	20									
Toluene	ND	5									

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **MB-1372** SampType: **MBLK** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/1/2017** RunNo: **888**
Client ID: **PBS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/1/2017** SeqNo: **22197**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	20									
Tetrachloroethene	ND	20									
Chlorobenzene	ND	20									
Ethylbenzene	ND	5									
m,p-Xylene	ND	5									
Bromoform	ND	20									
o-Xylene	ND	5									
1,1,2,2-Tetrachloroethane	ND	20									
1,3-Dichlorobenzene	ND	20									
1,4-Dichlorobenzene	ND	20									
1,2-Dichlorobenzene	ND	20									
Surr: 1,2-Dichloroethane-d4	190		200		96.8	69.51	130.49				
Surr: Toluene-d8	200		200		101	69.51	130.49				
Surr: 4-Bromofluorobenzene	190		200		92.6	69.51	130.49				

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	407	80	400	0	102	13.51	175.49	427	4.6	38	
Vinyl chloride	398	40	400	0	99.6	36.51	161.49	402	0.9	35	

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	61.1	40	400	0	15.3	9.51	130.49	59.5	2.7	40	
Bromomethane	177	80	400	0	44.3	9.51	130.49	160	10	39	
Trichlorofluoromethane	124	40	400	0	31.0	9.51	130.49	114	8.3	40	
Acetone	7910	400	8000	0	98.9	9.51	186.49	7210	9.3	40	
1,1-Dichloroethene	284	40	400	0	70.9	9.51	131.49	362	24	40	
Dichloromethane	369	80	400	0	92.1	61.51	138.49	375	1.8	38	
trans-1,2-Dichloroethene	414	40	400	0	104	69.51	148.49	378	9.2	29	
1,1-Dichloroethane	406	40	400	0	101	66.51	141.49	370	9.2	29	
cis-1,2-Dichloroethene	394	40	400	0	98.5	69.51	142.49	361	8.8	29	
Chloroform	405	40	400	0	101	64.51	136.49	367	9.7	27	
1,2-Dichloroethane	368	40	400	0	91.9	60.51	142.49	329	11	28	
1,1,1-Trichloroethane	386	40	400	0	96.4	60.51	152.49	347	10	30	
Carbon tetrachloride	373	40	400	0	93.1	49.51	146.49	340	9.1	32	
Benzene	385	10	400	0	96.3	69.51	137.49	353	8.7	30	
1,2-Dichloropropane	377	40	400	0	94.2	67.51	142.49	346	8.5	27	
Trichloroethene	398	40	400	0	99.6	69.51	149.49	350	13	29	
Bromodichloromethane	366	40	400	0	91.5	61.51	138.49	326	12	28	
cis-1,3-Dichloropropene	389	40	400	0	97.3	60.51	141.49	347	11	28	
trans-1,3-Dichloropropene	387	40	400	0	96.8	54.51	143.49	343	12	27	
1,1,2-Trichloroethane	379	40	400	0	94.8	66.51	137.49	347	8.8	40	
Toluene	385	10	400	0	96.2	69.51	139.49	339	13	28	
Dibromochloromethane	366	40	400	0	91.6	57.51	134.49	321	13	31	
Tetrachloroethene	415	40	400	0	104	69.51	159.49	360	14	36	

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCSD-1372** SampType: **LCSD** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS02** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22196**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	404	40	400	0	101	69.51	137.49	361	11	40	
Ethylbenzene	394	10	400	0	98.5	69.51	137.49	353	11	37	
m,p-Xylene	404	10	400	0	101	69.51	145.49	353	13	34	
Bromoform	372	40	400	0	92.9	47.51	135.49	333	11	32	
o-Xylene	407	10	400	0	102	69.51	145.49	361	12	40	
1,1,2,2-Tetrachloroethane	354	40	400	0	88.6	55.51	136.49	330	7.1	40	
1,3-Dichlorobenzene	373	40	400	0	93.3	69.51	141.49	338	9.8	28	
1,4-Dichlorobenzene	379	40	400	0	94.8	69.51	138.49	344	9.9	28	
1,2-Dichlorobenzene	363	40	400	0	90.8	69.51	130.49	328	10	29	
Surr: 1,2-Dichloroethane-d4	396		400		99.0	69.51	130.49	398		0	
Surr: Toluene-d8	395		400		98.6	69.51	130.49	393		0	
Surr: 4-Bromofluorobenzene	371		400		92.6	69.51	130.49	360		0	

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	427	80	400	0	107	13.51	175.49				
Vinyl chloride	402	40	400	0	100	36.51	161.49				
Chloroethane	59.5	40	400	0	14.9	9.51	130.49				
Bromomethane	160	80	400	0	40.0	9.51	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	114	40	400	0	28.6	9.51	130.49				
Acetone	7210	400	8000	0	90.1	9.51	186.49				
1,1-Dichloroethene	362	40	400	0	90.4	9.51	131.49				
Dichloromethane	375	80	400	0	93.8	61.51	138.49				
trans-1,2-Dichloroethene	378	40	400	0	94.5	69.51	148.49				
1,1-Dichloroethane	370	40	400	0	92.5	66.51	141.49				
cis-1,2-Dichloroethene	361	40	400	0	90.1	69.51	142.49				
Chloroform	367	40	400	0	91.8	64.51	136.49				
1,2-Dichloroethane	329	40	400	0	82.2	60.51	142.49				
1,1,1-Trichloroethane	347	40	400	0	86.9	60.51	152.49				
Carbon tetrachloride	340	40	400	0	85.0	49.51	146.49				
Benzene	353	10	400	0	88.3	69.51	137.49				
1,2-Dichloropropane	346	40	400	0	86.5	67.51	142.49				
Trichloroethene	350	40	400	0	87.6	69.51	149.49				
Bromodichloromethane	326	40	400	0	81.4	61.51	138.49				
cis-1,3-Dichloropropene	347	40	400	0	86.8	60.51	141.49				
trans-1,3-Dichloropropene	343	40	400	0	85.7	54.51	143.49				
1,1,2-Trichloroethane	347	40	400	0	86.8	66.51	137.49				
Toluene	339	10	400	0	84.8	69.51	139.49				
Dibromochloromethane	321	40	400	0	80.2	57.51	134.49				
Tetrachloroethene	360	40	400	0	90.0	69.51	159.49				
Chlorobenzene	361	40	400	0	90.4	69.51	137.49				
Ethylbenzene	353	10	400	0	88.3	69.51	137.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_S**

Sample ID: **LCS-1372** SampType: **LCS** TestCode: **VOC_S** Units: **µg/Kg** Prep Date: **6/2/2017** RunNo: **888**
Client ID: **LCSS** Batch ID: **A1372** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22198**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	353	10	400	0	88.3	69.51	145.49				
Bromoform	333	40	400	0	83.3	47.51	135.49				
o-Xylene	361	10	400	0	90.3	69.51	145.49				
1,1,2,2-Tetrachloroethane	330	40	400	0	82.5	55.51	136.49				
1,3-Dichlorobenzene	338	40	400	0	84.6	69.51	141.49				
1,4-Dichlorobenzene	344	40	400	0	85.9	69.51	138.49				
1,2-Dichlorobenzene	328	40	400	0	82.1	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	398		400		99.5	69.51	130.49				
Surr: Toluene-d8	393		400		98.4	69.51	130.49				
Surr: 4-Bromofluorobenzene	360		400		90.1	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **MB-1389** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **PBW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22229**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.5									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.5									

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **MB-1389** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **PBW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22229**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	0.5									
Bromoform	ND	1									
o-Xylene	ND	0.5									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.4		10		94.3	69.51	130.49				
Surr: Toluene-d8	10		10		103	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.8		10		98.1	69.51	130.49				

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	10	2	10	0	100	39.51	145.49				
Vinyl chloride	9.68	1	10	0	96.8	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	12.3	1	10	0	124	37.51	156.49				
Bromomethane	10.4	2	10	0	104	13.51	162.49				
Trichlorofluoromethane	9.45	1	10	0	94.5	45.51	154.49				
Acetone	193	10	200	0	96.7	21.51	188.49				
1,1-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
Dichloromethane	10.8	2	10	0	108	68.51	130.49				
trans-1,2-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
1,1-Dichloroethane	8.39	1	10	0	83.9	69.51	130.49				
cis-1,2-Dichloroethene	9.28	1	10	0	92.8	69.51	130.49				
Chloroform	10	1	10	0	100	69.51	130.49				
1,2-Dichloroethane	9.11	1	10	0	91.1	69.51	133.49				
1,1,1-Trichloroethane	9.26	1	10	0	92.6	69.51	135.49				
Carbon tetrachloride	9.32	1	10	0	93.2	62.51	143.49				
Benzene	9.29	0.5	10	0	92.9	69.51	130.49				
1,2-Dichloropropane	9.05	1	10	0	90.5	69.51	130.49				
Trichloroethene	9.24	1	10	0	92.4	67.51	138.49				
Bromodichloromethane	9.15	1	10	0	91.5	57.51	147.49				
cis-1,3-Dichloropropene	9.57	1	10	0	95.7	69.51	130.49				
trans-1,3-Dichloropropene	9.5	1	10	0	95.0	69.51	131.49				
1,1,2-Trichloroethane	9.01	1	10	0	90.1	69.51	130.49				
Toluene	8.9	0.5	10	0	89.0	69.51	130.49				
Dibromochloromethane	8.59	1	10	0	85.9	48.51	147.49				
Tetrachloroethene	9.39	1	10	0	93.9	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **LCS-1389** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **LCSW** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22228**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	9.64	1	10	0	96.4	69.51	130.49				
Ethylbenzene	9.21	0.5	10	0	92.1	69.51	130.49				
m,p-Xylene	9.28	0.5	10	0	92.8	64.51	139.49				
Bromoform	8.7	1	10	0	87.0	59.51	144.49				
o-Xylene	9.2	0.5	10	0	92.0	69.51	130.49				
1,1,2,2-Tetrachloroethane	8.33	1	10	0	83.3	69.51	130.49				
1,3-Dichlorobenzene	8.94	1	10	0	89.4	69.51	130.49				
1,4-Dichlorobenzene	8.97	1	10	0	89.7	69.51	130.49				
1,2-Dichlorobenzene	8.65	1	10	0	86.5	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	10.3		10		103	69.51	130.49				
Surr: Toluene-d8	9.69		10		96.9	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.16		10		91.6	69.51	130.49				

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	57.8	10	50	0	116	25.51	146.49	47.1	20	30	
Vinyl chloride	63.9	5	50	0	128	45.51	142.49	54.7	15	30	
Chloroethane	104	5	50	0	208	24.51	164.49	77.3	30	30	S
Bromomethane	68.8	10	50	0	138	9.51	172.49	60.8	12	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	74	5	50	0	148	31.51	164.49	65.3	13	30	
Acetone	1390	50	1000	0	139	9.51	188.49	1330	5.1	30	
1,1-Dichloroethene	68.8	5	50	0	138	61.51	133.49	61.7	11	30	S
Dichloromethane	71.6	10	50	0	143	68.51	130.49	66.8	7	30	S
trans-1,2-Dichloroethene	67.5	5	50	0	135	66.51	131.49	62.1	8.4	30	S
1,1-Dichloroethane	58.8	5	50	0	118	66.51	130.49	55.3	6.1	30	
cis-1,2-Dichloroethene	53.4	5	50	0	107	69.51	130.49	48.9	8.9	30	
Chloroform	57.1	5	50	0	114	68.51	130.49	53.1	7.3	30	
1,2-Dichloroethane	55	5	50	0	110	63.51	139.49	53	3.6	30	
1,1,1-Trichloroethane	52.6	5	50	0	105	64.51	139.49	49.7	5.8	30	
Carbon tetrachloride	52.8	5	50	0	106	55.51	146.49	48.7	8	30	
Benzene	53.4	2.5	50	0	107	66.51	134.49	50.3	6	30	
1,2-Dichloropropane	55.1	5	50	0	110	68.51	134.49	51.2	7.5	30	
Trichloroethene	53.2	5	50	0	106	67.51	138.49	49.3	7.6	30	
Bromodichloromethane	53.9	5	50	0	108	57.51	147.49	50.6	6.2	30	
cis-1,3-Dichloropropene	48.2	5	50	0	96.4	60.51	130.49	44.6	7.8	30	
trans-1,3-Dichloropropene	53.4	5	50	0	107	61.51	131.49	49.3	7.9	30	
1,1,2-Trichloroethane	55.1	5	50	0	110	69.51	131.49	52.3	5.1	30	
Toluene	51.3	2.5	50	0	103	37.51	130.49	48	6.5	30	
Dibromochloromethane	50.3	5	50	0	101	48.51	147.49	46.5	7.9	30	
Tetrachloroethene	54.3	5	50	0	109	62.51	134.49	51.8	4.9	30	
Chlorobenzene	56.2	5	50	0	112	69.51	130.49	53.1	5.7	30	
Ethylbenzene	54.6	2.5	50	0	109	69.51	130.49	50.5	7.8	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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22224**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	55.7	2.5	50	0	111	64.51	139.49	51.6	7.5	30	
Bromoform	52.9	5	50	0	106	59.51	144.49	48.7	8.3	30	
o-Xylene	55.8	2.5	50	0	112	68.51	130.49	52.4	6.3	30	
1,1,2,2-Tetrachloroethane	52.3	5	50	0	105	66.51	134.49	48.8	6.8	30	
1,3-Dichlorobenzene	50.5	5	50	0	101	69.51	130.49	45.7	10	30	
1,4-Dichlorobenzene	51.2	5	50	0	102	69.51	130.49	47	8.6	30	
1,2-Dichlorobenzene	49.6	5	50	0	99.3	69.51	130.49	46.2	7.3	30	
Surr: 1,2-Dichloroethane-d4	54.1		50		108	69.51	130.49	53.9		0	
Surr: Toluene-d8	48		50		96.0	69.51	130.49	48.2		0	
Surr: 4-Bromofluorobenzene	43.8		50		87.6	69.51	130.49	43.1		0	

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	47.1	10	50	0	94.2	25.51	146.49				
Vinyl chloride	54.7	5	50	0	109	45.51	142.49				
Chloroethane	77.3	5	50	0	154	24.51	164.49				
Bromomethane	60.8	10	50	0	122	9.51	172.49				
Trichlorofluoromethane	65.3	5	50	0	131	31.51	164.49				
Acetone	1330	50	1000	0	133	9.51	188.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	61.7	5	50	0	123	61.51	133.49				
Dichloromethane	66.8	10	50	0	134	68.51	130.49				S
trans-1,2-Dichloroethene	62.1	5	50	0	124	66.51	131.49				
1,1-Dichloroethane	55.3	5	50	0	111	66.51	130.49				
cis-1,2-Dichloroethene	48.9	5	50	0	97.8	69.51	130.49				
Chloroform	53.1	5	50	0	106	68.51	130.49				
1,2-Dichloroethane	53	5	50	0	106	63.51	139.49				
1,1,1-Trichloroethane	49.7	5	50	0	99.3	64.51	139.49				
Carbon tetrachloride	48.7	5	50	0	97.4	55.51	146.49				
Benzene	50.3	2.5	50	0	101	66.51	134.49				
1,2-Dichloropropane	51.2	5	50	0	102	68.51	134.49				
Trichloroethene	49.3	5	50	0	98.6	67.51	138.49				
Bromodichloromethane	50.6	5	50	0	101	57.51	147.49				
cis-1,3-Dichloropropene	44.6	5	50	0	89.1	60.51	130.49				
trans-1,3-Dichloropropene	49.3	5	50	0	98.6	61.51	131.49				
1,1,2-Trichloroethane	52.3	5	50	0	105	69.51	131.49				
Toluene	48	2.5	50	0	96.0	37.51	130.49				
Dibromochloromethane	46.5	5	50	0	93.0	48.51	147.49				
Tetrachloroethene	51.8	5	50	0	104	62.51	134.49				
Chlorobenzene	53.1	5	50	0	106	69.51	130.49				
Ethylbenzene	50.5	2.5	50	0	101	69.51	130.49				
m,p-Xylene	51.6	2.5	50	0	103	64.51	139.49				
Bromoform	48.7	5	50	0	97.3	59.51	144.49				

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#: **1706003**
07-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **VOC_W**

Sample ID: **1705317-01AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/2/2017** RunNo: **909**
Client ID: **BatchQC** Batch ID: **A1389** TestNo: **SW8260B** Analysis Date: **6/2/2017** SeqNo: **22223**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	52.4	2.5	50	0	105	68.51	130.49				
1,1,2,2-Tetrachloroethane	48.8	5	50	0	97.7	66.51	134.49				
1,3-Dichlorobenzene	45.7	5	50	0	91.4	69.51	130.49				
1,4-Dichlorobenzene	47	5	50	0	94.0	69.51	130.49				
1,2-Dichlorobenzene	46.2	5	50	0	92.3	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	53.9		50		108	69.51	130.49				
Surr: Toluene-d8	48.2		50		96.4	69.51	130.49				
Surr: 4-Bromofluorobenzene	43.1		50		86.2	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#: **1706003**
Date: **6/5/2017**

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.

S54 = Surrogate recovery was below laboratory acceptance limits.

S55 = Surrogate recovery was above laboratory acceptance limits.

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Definition Only

WO#: **1706003**

Date: **6/5/2017**

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

RUSH

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706003
Report Due By: 05-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: H&A-Chandler

Date Received: 01-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests VOC_S	VOC_W						Sample Remarks
PES1706003-01	HA-Ch-GW	AQ	5/31/2017 12:30:00 PM	3	0	2		A - 8260/ Acetone_Cs						
PES1706003-02	HA-Ch-SO	SO	5/31/2017 3:30:00 PM	1	0	2	A - 8260/ Acetone_Cs							

Comments: 48 HR TAT. Chain split into two separate work orders due to different TATs.

	Signature	Print Name	Company	Date/Time
Logged in by:	KMurray	KMurray	Alpha Analytical, Inc.	6/1/17 1035

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

CHAIN OF CUSTODY

2854

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044 Fax: 775-355-0406

Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: H&A-Chandler
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Alkalinity-310	Chloride-300	*Metals-6020							Remarks
1230	5/31/17	AQ	PES1706003-01	~~H&A~~ HA-ch-GW	48hr	3V		X	X										
1530	5/31/17	So	02	HA-ch-So	↓	1S		X	X										
1630	5/31/17	AQ	—	HA-ch-GW	STD	2P	X			X	X	X							
1530	5/31/17	So	—	HA-ch-So	STD	—		X				X							

ADDITIONAL INSTRUCTIONS:
*Metals = Cr, Fe, Mn

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 445.0636 (c) (2).

Sampled By: CR

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation)	Date:	Time:
Cathleen Ryan	5/31/17	1730	FED EX	—	—
			K Murray	6/1/17	1025

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

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Sparks, Nevada 89431
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Website: www.alpha-analytical.com

June 15, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: H&A-Chandler

Order No.: PES1706004

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

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#: **PES1706004**
Report Date: **6/15/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 12:30:00 PM
Project: H&A-Chandler
Lab ID: 1706004-01
Matrix: AQUEOUS
Client Sample ID HA-Ch-GW

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	680	50		mg/L	6/2/2017	Anions by EPA 300.0
Alkalinity, Total (As CaCO3 at pH 4.5)	420	20		mg/L	6/6/2017	Alkalinity by SM2320B
Chromium (Cr)	ND	0.020		mg/L	6/7/2017	Metals by EPA 200.8
Manganese (Mn)	1.3	0.010		mg/L	6/7/2017	Metals by EPA 200.8
Iron (Fe)	6.6	0.60		mg/L	6/7/2017	Metals by EPA 200.8

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225 Glendale Ave. - Suite 21 - Sparks, Nevada 89431-5578

Analytical Report

WO#: **PES1706004**
Report Date: **6/15/2017**

CLIENT: Prima Environmental
Collection Date: 5/31/2017 3:30:00 PM
Project: H&A-Chandler
Lab ID: 1706004-02
Matrix: SOIL
Client Sample ID HA-Ch-SO

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chromium (Cr)	8.1	1.0		mg/Kg	6/13/2017	Metals by EPA 6020
Manganese (Mn)	170	1.0		mg/Kg	6/13/2017	Metals by EPA 6020
Iron (Fe)	8300	500		mg/Kg	6/13/2017	Metals by EPA 6020

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QC SUMMARY REPORT

WO#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **300_0_W**

Sample ID: **MB-1376** SampType: **MBLK** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **PBW** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21935**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID: **LCS-1376** SampType: **LCS** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **LCSW** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21936**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	51.2	0.5	50	0	102	89.51	110.49				

Sample ID: **1705312-01BMSD** SampType: **MSD** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **BatchQC** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21940**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	283	2.5	250	30.77	101	79.51	120.49	282	0.087	15	

Sample ID: **1705312-01BMS** SampType: **MS** TestCode: **300_0_W** Units: **mg/L** Prep Date: **6/1/2017** RunNo: **898**
Client ID: **BatchQC** Batch ID: **1376** TestNo: **E300.0** Analysis Date: **6/2/2017** SeqNo: **21939**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	282	2.5	250	30.77	101	79.51	120.49				

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#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **300_0_W**

Sample ID:	**1705312-01BMS**	SampType:	**MS**	TestCode:	**300_0_W**	Units:	**mg/L**	Prep Date:	**6/1/2017**	RunNo:	**898**
Client ID:	**BatchQC**	Batch ID:	**1376**	TestNo:	**E300.0**			Analysis Date:	**6/2/2017**	SeqNo:	**21939**

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#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **ALKALINITY_W**

Sample ID: **WC170517-01** SampType: **LCS** TestCode: **ALKALINITY_** Units: **mg/L** Prep Date: **6/6/2017** RunNo: **925**
Client ID: **LCSW** Batch ID: **W0606AL_A** TestNo: **Alkalinity** Analysis Date: **6/6/2017** SeqNo: **22620**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3 at pH 4.5)	219	10	250	0	87.8	79.51	120.49				

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#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **METALS_SO**

Sample ID: **MB-1433** SampType: **MBLK** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **PBS** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23317**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	1									
Manganese (Mn)	ND	1									
Iron (Fe)	ND	500									

Sample ID: **LCS-1433** SampType: **LCS** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **LCSS** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23319**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	28.5	1	25	0	114	79.51	120.49				
Manganese (Mn)	282	1	250	0	113	79.51	120.49				
Iron (Fe)	5320	500	5000	0	106	79.51	120.49				

Sample ID: **1706056-01AMSD** SampType: **MSD** TestCode: **METALS_SO** Units: **mg/Kg** Prep Date: **6/7/2017** RunNo: **960**
Client ID: **BatchQC** Batch ID: **1433** TestNo: **E200.8** Analysis Date: **6/8/2017** SeqNo: **23321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	38.9	1	25	13.35	102	74.51	125.49	42.2	8	20	
Manganese (Mn)	613	1	250	306.8	123	74.51	125.49	667	8.4	20	
Iron (Fe)	23700	500	5000	0	156	74.51	125.49	28800	20	20	S

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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Sparks, Nevada 89431
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QC SUMMARY REPORT

WO#: **1706004**
15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler
TestCode: **METALS_T_200_8**

Sample ID: **MB-1409** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **PBW** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23278**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	0.01									
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID: **LCS-1409** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **LCSW** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23280**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.268	0.02	0.25	0	107	84.51	115.49				
Manganese (Mn)	2.68	0.01	2.5	0	107	84.51	115.49				
Iron (Fe)	52.9	0.6	50	0	106	84.51	115.49				

Sample ID: **1705222-02AMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **BatchQC** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23282**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.3	0.02	0.25	0	113	69.51	130.49	0.282	6.3	20	
Manganese (Mn)	4.03	0.01	2.5	1.227	112	69.51	130.49	3.84	4.9	20	
Iron (Fe)	56.5	0.6	50	3.663	106	69.51	130.49	56.2	0.6	20	

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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Sparks, Nevada 89431
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QC SUMMARY REPORT

WO#: **1706004**

15-Jun-17

Client: Prima Environmental
Project: H&A-Chandler

TestCode: **METALS_T_200_8**

Sample ID: **1705222-02AMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/5/2017** RunNo: **958**
Client ID: **BatchQC** Batch ID: **1409** TestNo: **E200.8** Analysis Date: **6/7/2017** SeqNo: **23281**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.282	0.02	0.25	0	106	69.51	130.49				
Manganese (Mn)	3.84	0.01	2.5	1.227	104	69.51	130.49				
Iron (Fe)	56.2	0.6	50	3.663	105	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#: **1706004**

Date:

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#: **1706004**

Date:

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706004
Report Due By: 15-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: H&A-Chandler

Date Received: 01-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	ALKALINITY_W	METALS_SO	METALS_T_200_8				Sample Remarks
PES1706004-01	HA-Ch-GW	AQ	5/31/2017 12:30:00 PM	2	0	10	A - Cl	A - Alk		B - Cr, Fe, Mn				
PES1706004-02	HA-Ch-SO	SO	5/31/2017 3:30:00 PM	1	0	10			A - Cr, Fe, Mn					

Comments: Chain split into two separate work orders due to different TATs.

	Signature	Print Name	Company	Date/Time
Logged in by:	KMurray	K Murray	Alpha Analytical, Inc.	6/1/17 1050

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

CHAIN OF CUSTODY

2854

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Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: HSA-Chandlar
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Alkalinity-310	Chloride-300	Metals-6020							Remarks
1230	5/31/17	AQ	—	HA-ch-GW	48hr	3V		X	X										
1530	5/31/17	So	—	HA-ch-So	↓	1S		X	X										
1230	5/31/17	AQ	PES1706004-01	HA-ch-GW	STD	2P	X			X	X	X							
1530	5/31/17	So	02	HA-ch-So	STD	—		X				X							

ADDITIONAL INSTRUCTIONS:
*metals = Cr, Fe, Mn

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 445.0636 (c) (2).

Sampled By: CR

Relinquished by: (Signature/Affiliation)	Date:	Time:	Received by: (Signature/Affiliation):	Date:	Time:
[signature]	5/31/17	1730	FED EX	—	—
			[signature]	6/1/17	1040

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

Alpha Analytical, Inc
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Sparks, Nevada 89431
TEL: (775) 355-1044 FAX: (775) 355-0406
Website: www.alpha-analytical.com

June 19, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: HA-Chand

Order No.: PES1706148

Dear Cindy Schreier:

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. Version 8260B was used.

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

Sincerely,

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#: **PES1706148**
Report Date: **6/19/2017**

CLIENT: Prima Environmental
Collection Date: 6/13/2017 6:10:00 PM
Project: HA-Chand
Lab ID: 1706148-01
Matrix: AQUEOUS
Client Sample ID HA-Chan-To

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	6/15/2017	Anions by EPA 300.0
Chromium (Cr)	ND	0.020		mg/L	6/16/2017	Metals by EPA 200.8
Manganese (Mn)	ND	0.010		mg/L	6/16/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	6/16/2017	Metals by EPA 200.8
Chloromethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
Vinyl chloride	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Bromomethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
Trichlorofluoromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Acetone	ND	2,000		µg/L	6/16/2017	VOCs by EPA 8260
1,1-Dichloroethene	410	100		µg/L	6/16/2017	VOCs by EPA 8260
Dichloromethane	ND	400		µg/L	6/16/2017	VOCs by EPA 8260
trans-1,2-Dichloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1-Dichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
cis-1,2-Dichloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chloroform	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1,1-Trichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Carbon tetrachloride	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Benzene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichloropropane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Trichloroethene	7200	100		µg/L	6/16/2017	VOCs by EPA 8260
Bromodichloromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
cis-1,3-Dichloropropene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
trans-1,3-Dichloropropene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,1,2-Trichloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Toluene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
Dibromochloromethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Tetrachloroethene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Chlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Ethylbenzene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
m,p-Xylene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
Bromoform	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
o-Xylene	ND	50		µg/L	6/16/2017	VOCs by EPA 8260
1,1,2,2-Tetrachloroethane	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,3-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,4-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
1,2-Dichlorobenzene	ND	100		µg/L	6/16/2017	VOCs by EPA 8260
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	6/16/2017	VOCs by EPA 8260
Surr: Toluene-d8	101	70-130		%Rec	6/16/2017	VOCs by EPA 8260
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	6/16/2017	VOCs by EPA 8260

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **300_0_W**

Sample ID	**MB-1494**	SampType: **MBLK**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**PBW**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25168**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID	**LCS-1494**	SampType: **LCS**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**LCSW**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25169**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.6	0.5	50	0	99.1	89.51	110.49				

Sample ID	**1706146-05BMSD**	SampType: **MSD**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**BatchQC**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25176**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	272	2.5	250	23.02	99.4	79.51	120.49	272	0.092	15	

Sample ID	**1706146-05BMS**	SampType: **MS**	TestCode: **300_0_W**	Units: **mg/L**	Prep Date: **6/15/2017**	RunNo: **1030**
Client ID:	**BatchQC**	Batch ID: **1494**	TestNo: **E300.0**		Analysis Date: **6/15/2017**	SeqNo: **25175**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	272	2.5	250	23.02	99.5	79.51	120.49				

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

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QC SUMMARY REPORT

WO#: **1706148**

19-Jun-17

Client: Prima Environmental
Project: HA-Chand

TestCode: **300_0_W**

Sample ID	**1706146-05BMS**	SampType:	**MS**	TestCode:	**300_0_W**	Units:	**mg/L**	Prep Date:	**6/15/2017**	RunNo:	**1030**		
Client ID:	**BatchQC**	Batch ID:	**1494**	TestNo:	**E300.0**			Analysis Date:	**6/15/2017**	SeqNo:	**25175**		

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 limit

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **METALS_T_200_8**

Sample ID **MB-1491** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **PBW** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25231**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	ND	0.01									
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID **LCS-1491** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **LCSW** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25233**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.267	0.02	0.25	0	107	84.51	115.49				
Manganese (Mn)	2.66	0.01	2.5	0	106	84.51	115.49				
Iron (Fe)	55.6	0.6	50	0	111	84.51	115.49				

Sample ID **1706141-02DMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **BatchQC** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25235**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.267	0.02	0.25	0	107	69.51	130.49	0.232	14	20	
Manganese (Mn)	2.66	0.01	2.5	0	106	69.51	130.49	2.33	13	20	
Iron (Fe)	55.8	0.6	50	0	112	69.51	130.49	54	3.2	20	

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **METALS_T_200_8**

Sample ID **1706141-02DMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L** Prep Date: **6/15/2017** RunNo: **1034**
Client ID: **BatchQC** Batch ID: **1491** TestNo: **E200.8** Analysis Date: **6/16/2017** SeqNo: **25234**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium (Cr)	0.232	0.02	0.25	0	93.0	69.51	130.49				
Manganese (Mn)	2.33	0.01	2.5	0	93.1	69.51	130.49				
Iron (Fe)	54	0.6	50	0	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 limit

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **MB-1500** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **PBW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.5									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.5									

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **MB-1500** SampType: **MBLK** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **PBW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25292**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	0.5									
Bromoform	ND	1									
o-Xylene	ND	0.5									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.1		10		90.7	69.51	130.49				
Surr: Toluene-d8	11		10		106	69.51	130.49				
Surr: 4-Bromofluorobenzene	12		10		116	69.51	130.49				

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	10.3	2	10	0	104	39.51	145.49				
Vinyl chloride	8.37	1	10	0	83.7	69.51	130.49				

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroethane	10.8	1	10	0	108	37.51	156.49				
Bromomethane	8.71	2	10	0	87.1	13.51	162.49				
Trichlorofluoromethane	10.6	1	10	0	106	45.51	154.49				
Acetone	233	10	200	0	116	21.51	188.49				
1,1-Dichloroethene	8.76	1	10	0	87.6	69.51	130.49				
Dichloromethane	9.29	2	10	0	92.9	68.51	130.49				
trans-1,2-Dichloroethene	9.64	1	10	0	96.4	69.51	130.49				
1,1-Dichloroethane	9.77	1	10	0	97.7	69.51	130.49				
cis-1,2-Dichloroethene	8.79	1	10	0	87.9	69.51	130.49				
Chloroform	9.35	1	10	0	93.5	69.51	130.49				
1,2-Dichloroethane	10.3	1	10	0	104	69.51	133.49				
1,1,1-Trichloroethane	10.4	1	10	0	104	69.51	135.49				
Carbon tetrachloride	9.54	1	10	0	95.4	62.51	143.49				
Benzene	9.8	0.5	10	0	98.0	69.51	130.49				
1,2-Dichloropropane	10.3	1	10	0	103	69.51	130.49				
Trichloroethene	8.63	1	10	0	86.3	67.51	138.49				
Bromodichloromethane	9.06	1	10	0	90.6	57.51	147.49				
cis-1,3-Dichloropropene	8.94	1	10	0	89.4	69.51	130.49				
trans-1,3-Dichloropropene	9.19	1	10	0	91.9	69.51	131.49				
1,1,2-Trichloroethane	9.52	1	10	0	95.2	69.51	130.49				
Toluene	9.59	0.5	10	0	95.9	69.51	130.49				
Dibromochloromethane	9.58	1	10	0	95.8	48.51	147.49				
Tetrachloroethene	8.81	1	10	0	88.1	69.51	130.49				

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **LCS-1500** SampType: **LCS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **LCSW** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25291**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	9.17	1	10	0	91.7	69.51	130.49				
Ethylbenzene	10.2	0.5	10	0	102	69.51	130.49				
m,p-Xylene	9.65	0.5	10	0	96.5	64.51	139.49				
Bromoform	9.45	1	10	0	94.5	59.51	144.49				
o-Xylene	8.43	0.5	10	0	84.3	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.31	1	10	0	93.1	69.51	130.49				
1,3-Dichlorobenzene	9.74	1	10	0	97.4	69.51	130.49				
1,4-Dichlorobenzene	9.74	1	10	0	97.4	69.51	130.49				
1,2-Dichlorobenzene	9.4	1	10	0	94.0	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	10.7		10		106	69.51	130.49				
Surr: Toluene-d8	9.93		10		99.3	69.51	130.49				
Surr: 4-Bromofluorobenzene	10.1		10		101	69.51	130.49				

Sample ID **1706146-05AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	52.4	10	50	0	105	25.51	146.49	49.7	5.2	30	
Vinyl chloride	40.9	5	50	0	81.7	45.51	142.49	39	4.5	30	
Chloroethane	55.1	5	50	0	110	24.51	164.49	56.1	1.8	30	
Bromomethane	48.6	10	50	0	97.2	9.51	172.49	35.5	31	30	R

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	51	5	50	0	102	31.51	164.49	51	0.078	30	
Acetone	953	50	1000	0	95.3	9.51	188.49	913	4.3	30	
1,1-Dichloroethene	41.7	5	50	0	83.5	61.51	133.49	40.3	3.4	30	
Dichloromethane	45	10	50	0	89.9	68.51	130.49	43.8	2.6	30	
trans-1,2-Dichloroethene	45.6	5	50	0	91.2	66.51	131.49	43.8	4.1	30	
1,1-Dichloroethane	48.2	5	50	0	96.4	66.51	130.49	47.2	2.1	30	
cis-1,2-Dichloroethene	42.2	5	50	0	84.3	69.51	130.49	40.9	3	30	
Chloroform	47	5	50	0	93.9	68.51	130.49	45.6	2.9	30	
1,2-Dichloroethane	53.3	5	50	0	107	63.51	139.49	52.1	2.3	30	
1,1,1-Trichloroethane	51.1	5	50	0	102	64.51	139.49	50.8	0.63	30	
Carbon tetrachloride	46.8	5	50	0	93.7	55.51	146.49	46.7	0.26	30	
Benzene	47.1	2.5	50	0	94.2	66.51	134.49	46.4	1.5	30	
1,2-Dichloropropane	52	5	50	0	104	68.51	134.49	51.6	0.71	30	
Trichloroethene	40.9	5	50	0	81.9	67.51	138.49	40	2.4	30	
Bromodichloromethane	45.5	5	50	0	91.0	57.51	147.49	44.7	1.8	30	
cis-1,3-Dichloropropene	39.6	5	50	0	79.2	60.51	130.49	38.5	2.8	30	
trans-1,3-Dichloropropene	41.7	5	50	0	83.3	61.51	131.49	40.1	3.7	30	
1,1,2-Trichloroethane	45	5	50	0	90.0	69.51	131.49	44	2.2	30	
Toluene	46.1	2.5	50	0	92.2	37.51	130.49	45.3	1.8	30	
Dibromochloromethane	45	5	50	0	90.0	48.51	147.49	44	2.3	30	
Tetrachloroethene	60.8	5	50	0	82.1	62.51	134.49	59.7	1.8	30	
Chlorobenzene	42.8	5	50	0	85.5	69.51	130.49	42.3	1.2	30	
Ethylbenzene	47.4	2.5	50	0	94.8	69.51	130.49	46.8	1.4	30	

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

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QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID **1706146-05AMSD** SampType: **MSD** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25313**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	44.7	2.5	50	0	89.3	64.51	139.49	44.2	1.1	30	
Bromoform	44.6	5	50	0	89.3	59.51	144.49	42.8	4.1	30	
o-Xylene	39.6	2.5	50	0	79.2	68.51	130.49	39.4	0.63	30	
1,1,2,2-Tetrachloroethane	44.6	5	50	0	89.3	66.51	134.49	43.2	3.3	30	
1,3-Dichlorobenzene	46.2	5	50	0	92.5	69.51	130.49	45.9	0.74	30	
1,4-Dichlorobenzene	46.2	5	50	0	92.5	69.51	130.49	45.4	1.8	30	
1,2-Dichlorobenzene	45.2	5	50	0	90.4	69.51	130.49	44.2	2.3	30	
Surr: 1,2-Dichloroethane-d4	56.2		50		112	69.51	130.49	56.3		0	
Surr: Toluene-d8	48.9		50		97.8	69.51	130.49	48.4		0	
Surr: 4-Bromofluorobenzene	49.5		50		99.0	69.51	130.49	49.9		0	

Sample ID **1706146-05AMS** SampType: **MS** TestCode: **VOC_W** Units: **µg/L** Prep Date: **6/16/2017** RunNo: **1037**
Client ID: **BatchQC** Batch ID: **A1500** TestNo: **SW8260B** Analysis Date: **6/16/2017** SeqNo: **25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	49.7	10	50	0	99.5	25.51	146.49				
Vinyl chloride	39	5	50	0	78.1	45.51	142.49				
Chloroethane	56.1	5	50	0	112	24.51	164.49				
Bromomethane	35.5	10	50	0	71.0	9.51	172.49				
Trichlorofluoromethane	51	5	50	0	102	31.51	164.49				
Acetone	913	50	1000	0	91.3	9.51	188.49				

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

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

QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	40.3	5	50	0	80.7	61.51	133.49				
Dichloromethane	43.8	10	50	0	87.6	68.51	130.49				
trans-1,2-Dichloroethene	43.8	5	50	0	87.6	66.51	131.49				
1,1-Dichloroethane	47.2	5	50	0	94.4	66.51	130.49				
cis-1,2-Dichloroethene	40.9	5	50	0	81.9	69.51	130.49				
Chloroform	45.6	5	50	0	91.2	68.51	130.49				
1,2-Dichloroethane	52.1	5	50	0	104	63.51	139.49				
1,1,1-Trichloroethane	50.8	5	50	0	102	64.51	139.49				
Carbon tetrachloride	46.7	5	50	0	93.5	55.51	146.49				
Benzene	46.4	2.5	50	0	92.8	66.51	134.49				
1,2-Dichloropropane	51.6	5	50	0	103	68.51	134.49				
Trichloroethene	40	5	50	0	79.9	67.51	138.49				
Bromodichloromethane	44.7	5	50	0	89.4	57.51	147.49				
cis-1,3-Dichloropropene	38.5	5	50	0	77.1	60.51	130.49				
trans-1,3-Dichloropropene	40.1	5	50	0	80.3	61.51	131.49				
1,1,2-Trichloroethane	44	5	50	0	88.0	69.51	131.49				
Toluene	45.3	2.5	50	0	90.6	37.51	130.49				
Dibromochloromethane	44	5	50	0	87.9	48.51	147.49				
Tetrachloroethene	59.7	5	50	0	79.9	62.51	134.49				
Chlorobenzene	42.3	5	50	0	84.5	69.51	130.49				
Ethylbenzene	46.8	2.5	50	0	93.5	69.51	130.49				
m,p-Xylene	44.2	2.5	50	0	88.4	64.51	139.49				
Bromoform	42.8	5	50	0	85.7	59.51	144.49				

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

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Website: www.alpha-analytical.com

QC SUMMARY REPORT

WO#: **1706148**
19-Jun-17

Client: Prima Environmental
Project: HA-Chand
TestCode: **VOC_W**

Sample ID	**1706146-05AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**	Prep Date:	**6/16/2017**	RunNo:	**1037**
Client ID:	**BatchQC**	Batch ID:	**A1500**	TestNo:	**SW8260B**			Analysis Date:	**6/16/2017**	SeqNo:	**25312**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	39.4	2.5	50	0	78.7	68.51	130.49				
1,1,2,2-Tetrachloroethane	43.2	5	50	0	86.4	66.51	134.49				
1,3-Dichlorobenzene	45.9	5	50	0	91.8	69.51	130.49				
1,4-Dichlorobenzene	45.4	5	50	0	90.8	69.51	130.49				
1,2-Dichlorobenzene	44.2	5	50	0	88.4	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	56.3		50		113	69.51	130.49				
Surr: Toluene-d8	48.4		50		96.7	69.51	130.49				
Surr: 4-Bromofluorobenzene	49.9		50		99.8	69.51	130.49				

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

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Definition Only

WO#: **1706148**

Date:

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.

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1706148
Report Due By: 29-Jun-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: HA-Chand

Date Received: 15-Jun-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	METALS_T_200_8	VOC_W					Sample Remarks
PES1706148-01	HA-Chan-To	AQ	6/13/2017 6:10:00 PM	5	0	10	B - Cl	C - Cr,Fe,Mn	A - 8260_Cs					

Comments:

	Signature	Print Name	Company	Date/Time
Logged in by:	Elisaibet Hernandez	Elisaibet Hernandez	Alpha Analytical, Inc.	06/15/17 11:42

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

CHAIN OF CUSTODY

2858

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Alpha Analytical, Inc.
Main Laboratory: 255 Glendale Ave, Suite 21 Sparks, NV 89431 Phone: 775-355-1044
Fax: 775-355-0406

Satellite Service Centers:
Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 Phone: 714-386-2901
Northern NV: Elko, NV 89801 Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 Phone: 702-281-4848

Page # 1 of 1

Consultant/ Client Info:
Company:
Address:
City, State, Zip:

Job and Purchase Order Info:
Job #
Job Name: HA-Chand
P.O. #:

Report Attention/Project Manager:
Name:
Email Address:
Phone #:
Cell #:

QC Deliverable Info:
EDD Required? Yes / No EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs	Chloride	Metals (Cr, Fe, Mn)								Remarks
1810	6/13/17	AQ	PES1706148-01	HA-Chan-TØ	STD	3V, 2P	X	X	X	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 445.0636 (c) (2).

Sampled By: CL

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature] / PRIMA	6/14/17	1530	FED EX		—
			Elizabet Hernandez	06/15/17	11:42

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

07/16

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

July 28, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762
TEL: (916) 939-7300
FAX (916) 939-7398

RE: HA Chan

Order No.: PES1707079

Dear Cindy Schreier:

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,

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-01
Matrix: AQUEOUS
Client Sample ID HA Chan Con-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	650	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	ND	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
Vinyl chloride	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Bromomethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Acetone	ND	2,000		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethene	390	100		µg/L	7/18/2017	VOCs by EPA 8260B
Dichloromethane	ND	400		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroform	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Benzene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Trichloroethene	7,300	100		µg/L	7/18/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Toluene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Chlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Ethylbenzene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
m,p-Xylene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
Bromoform	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
o-Xylene	ND	50		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	100		µg/L	7/18/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	92	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: Toluene-d8	110	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	7/18/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-02
Matrix: AQUEOUS
Client Sample ID HA Chan AP-pH LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	ND	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	800		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	160		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	2,900	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	102	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	94	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-03
Matrix: AQUEOUS
Client Sample ID HA Chan AP-pH HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	680	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	0.019	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	20	10		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	2.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	102	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	99	70-130		%Rec	7/17/2017	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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-04
Matrix: AQUEOUS
Client Sample ID HA Chan AP-Fe-LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	660	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	0.30	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	140	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	1,600		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	320		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	6,000	80		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	40		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	80		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	120	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	103	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	95	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-05
Matrix: AQUEOUS
Client Sample ID HA Chan AP-Fe-HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	660	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	3.1	0.010		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	110	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	35	20		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	100		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	820	20		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	250	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	12	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	40	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	9.7	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	2.5		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	5.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	76	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	97	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Reporting Limits were increased due to high concentrations of target analytes.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-06
Matrix: AQUEOUS
Client Sample ID HA Chan KMnO4 LD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	650	500		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	71	0.10		mg/L	7/25/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromomethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Acetone	ND	20		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Dichloromethane	ND	4.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1-Dichloroethane	3.1	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chloroform	2.5	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloroethane	1.9	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	2.0	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/17/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/17/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: Toluene-d8	106	70-130		%Rec	7/17/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	89	70-130		%Rec	7/17/2017	VOCs by EPA 8260B

NOTES:
Some Reporting Limits were increased due to sample foaming.

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#: **PES1707079**
Report Date: **7/28/2017**

CLIENT: Prima Environmental
Collection Date: 7/11/2017 11:30:00 AM
Project: HA Chan
Lab ID: 1707079-07
Matrix: AQUEOUS
Client Sample ID HA Chan KMnO4 HD-B

Analyses	Result	PQL	Qual	Units	Date Analyzed	Method
Chloride	670	5.0		mg/L	7/26/2017	Anions by EPA 300.0
Manganese (Mn)	290	0.010		mg/L	7/26/2017	Metals by EPA 200.8
Iron (Fe)	ND	0.60		mg/L	7/25/2017	Metals by EPA 200.8
Chloromethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
Vinyl chloride	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Bromomethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
Trichlorofluoromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Acetone	ND	20		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Dichloromethane	ND	4.0		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,2-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1-Dichloroethane	3.0	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,2-Dichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chloroform	2.3	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloroethane	1.7	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,1-Trichloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Carbon tetrachloride	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Benzene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichloropropane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Trichloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Bromodichloromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
cis-1,3-Dichloropropene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
trans-1,3-Dichloropropene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2-Trichloroethane	1.8	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Toluene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
Dibromochloromethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Tetrachloroethene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Chlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Ethylbenzene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
m,p-Xylene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
Bromoform	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
o-Xylene	ND	0.50		µg/L	7/18/2017	VOCs by EPA 8260B
1,1,2,2-Tetrachloroethane	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,3-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,4-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
1,2-Dichlorobenzene	ND	1.0		µg/L	7/18/2017	VOCs by EPA 8260B
Surr: 1,2-Dichloroethane-d4	91	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: Toluene-d8	77	70-130		%Rec	7/18/2017	VOCs by EPA 8260B
Surr: 4-Bromofluorobenzene	98	70-130		%Rec	7/18/2017	VOCs by EPA 8260B

NOTES:
Some Reporting Limits were increased due to sample foaming.

Alpha Analytical, Inc
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TEL: (775) 355-1044 FAX: (775) 355-0406
Website: www.alpha-analytical.com

QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **300_0_W**

Sample ID:	**MB-1743**	SampType:	**MBLK**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**PBW**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32033**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.5									

Sample ID:	**LCSD-1743**	SampType:	**LCSD**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**LCSS02**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32035**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.7	0.5	50	0	99.4	89.51	110.49	49.7	0.021	15	

Sample ID:	**LCS-1743**	SampType:	**LCS**	TestCode:	**300_0_W**	Units:	**mg/L**
Client ID:	**LCSW**	Batch ID:	**1743**	TestNo:	**E300.0**		
Prep Date:	**7/20/2017**	RunNo:	**1301**	SeqNo:	**32034**		
Analysis Date:	**7/26/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	49.7	0.5	50	0	99.4	89.51	110.49				

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

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

QC SUMMARY REPORT

WO#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **METALS_T_200_8**

Sample ID: **MB-1764** SampType: **MBLK** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **PBW** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31819**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	ND	0.005									
Iron (Fe)	ND	0.3									

Sample ID: **LCS-1764** SampType: **LCS** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **LCSW** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31821**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.8	0.01	2.5	0	112	84.51	115.49				
Iron (Fe)	52.9	0.6	50	0	106	84.51	115.49				

Sample ID: **1707151-03AMSD** SampType: **MSD** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **BatchQC** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31823**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.9	0.01	2.5	0	116	69.51	130.49	2.79	3.7	20	
Iron (Fe)	57.7	0.6	50	0	115	69.51	130.49	56.8	1.7	20	

Sample ID: **1707151-03AMS** SampType: **MS** TestCode: **METALS_T_2** Units: **mg/L**
Client ID: **BatchQC** Batch ID: **1764** TestNo: **E200.8**
Prep Date: **7/24/2017** RunNo: **1290** SeqNo: **31822**
Analysis Date: **7/25/2017**

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese (Mn)	2.79	0.01	2.5	0	111	69.51	130.49				
Iron (Fe)	56.8	0.6	50	0	113	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

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

QC SUMMARY REPORT

WO#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **VOC_W**

Sample ID:	**MB-1710**	SampType:	**MBLK**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**PBW**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30211**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.25									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.25									
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.25									
m,p-Xylene	ND	0.25									
Bromoform	ND	1									
o-Xylene	ND	0.25									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9.6		10		95.8	69.51	130.49				
Surr: Toluene-d8	10		10		102	69.51	130.49				
Surr: 4-Bromofluorobenzene	10		10		99.5	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**LCS-1710**	SampType:	**LCS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**LCSW**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30210**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	9.44	2	10	0	94.4	39.51	145.49				
Vinyl chloride	9.78	1	10	0	97.8	69.51	130.49				
Chloroethane	11.4	1	10	0	114	37.51	156.49				
Bromomethane	10.4	2	10	0	104	13.51	162.49				
Trichlorofluoromethane	11.8	1	10	0	118	45.51	154.49				
Acetone	164	10	200	0	82.0	21.51	188.49				
1,1-Dichloroethene	10.3	1	10	0	103	69.51	130.49				
Dichloromethane	8.95	2	10	0	89.5	68.51	130.49				
trans-1,2-Dichloroethene	10.3	1	10	0	103	69.51	130.49				
1,1-Dichloroethane	9.89	1	10	0	98.9	69.51	130.49				
cis-1,2-Dichloroethene	9.14	1	10	0	91.4	69.51	130.49				
Chloroform	9.62	1	10	0	96.2	69.51	130.49				
1,2-Dichloroethane	9.37	1	10	0	93.7	69.51	133.49				
1,1,1-Trichloroethane	10.3	1	10	0	103	69.51	135.49				
Carbon tetrachloride	9.83	1	10	0	98.3	62.51	143.49				
Benzene	9.24	0.25	10	0	92.4	69.51	130.49				
1,2-Dichloropropane	9.72	1	10	0	97.2	69.51	130.49				
Trichloroethene	10.2	1	10	0	102	67.51	138.49				
Bromodichloromethane	9.12	1	10	0	91.2	57.51	147.49				
cis-1,3-Dichloropropene	9.24	1	10	0	92.4	69.51	130.49				
trans-1,3-Dichloropropene	8.34	1	10	0	83.4	69.51	131.49				
1,1,2-Trichloroethane	9.15	1	10	0	91.5	69.51	130.49				
Toluene	10.7	0.25	10	0	107	69.51	130.49				
Dibromochloromethane	8.6	1	10	0	86.0	48.51	147.49				
Tetrachloroethene	11.2	1	10	0	112	69.51	130.49				
Chlorobenzene	10.1	1	10	0	101	69.51	130.49				
Ethylbenzene	10.7	0.25	10	0	107	69.51	130.49				
m,p-Xylene	10.7	0.25	10	0	106	64.51	139.49				
Bromoform	8.11	1	10	0	81.1	59.51	144.49				
o-Xylene	10.2	0.25	10	0	102	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.12	1	10	0	91.2	69.51	130.49				
1,3-Dichlorobenzene	10.3	1	10	0	103	69.51	130.49				
1,4-Dichlorobenzene	10.4	1	10	0	104	69.51	130.49				
1,2-Dichlorobenzene	9.93	1	10	0	99.3	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.42		10		94.2	69.51	130.49				
Surr: Toluene-d8	10.9		10		109	69.51	130.49				
Surr: 4-Bromofluorobenzene	10.4		10		104	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan

TestCode: **VOC_W**

Sample ID:	**1707104-01AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30275**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	50.7	10	50	0	101	25.51	146.49	43.3	16	30	
Vinyl chloride	52.9	5	50	0	106	45.51	142.49	47.3	11	30	
Chloroethane	61.3	5	50	0	123	24.51	164.49	54	13	30	
Bromomethane	62.7	10	50	0	125	9.51	172.49	49.7	23	30	
Trichlorofluoromethane	59.2	5	50	0	118	31.51	164.49	53.7	9.7	30	
Acetone	912	50	1000	0	91.2	9.51	188.49	807	12	30	
1,1-Dichloroethene	54.7	5	50	0	109	61.51	133.49	49.4	10	30	
Dichloromethane	46.3	10	50	0	92.6	68.51	130.49	41.2	12	30	
trans-1,2-Dichloroethene	54.8	5	50	0	110	66.51	131.49	48.1	13	30	
1,1-Dichloroethane	54.1	5	50	0	108	66.51	130.49	47.9	12	30	
cis-1,2-Dichloroethene	49.5	5	50	0	99.0	69.51	130.49	43.4	13	30	
Chloroform	53.5	5	50	0	102	68.51	130.49	47.3	12	30	
1,2-Dichloroethane	49.6	5	50	0	99.2	63.51	139.49	44.8	10	30	
1,1,1-Trichloroethane	56.6	5	50	0	113	64.51	139.49	49.2	14	30	
Carbon tetrachloride	51.7	5	50	0	103	55.51	146.49	45.8	12	30	
Benzene	50.1	1.25	50	0	100	66.51	134.49	44.4	12	30	
1,2-Dichloropropane	50.8	5	50	0	102	68.51	134.49	46.2	9.5	30	
Trichloroethene	54.1	5	50	0	108	67.51	138.49	47.3	13	30	
Bromodichloromethane	49.2	5	50	0	98.4	57.51	147.49	42.7	14	30	
cis-1,3-Dichloropropene	43.3	5	50	0	86.6	60.51	130.49	37.6	14	30	
trans-1,3-Dichloropropene	45.9	5	50	0	91.7	61.51	131.49	40	14	30	
1,1,2-Trichloroethane	49.3	5	50	0	98.6	69.51	131.49	43.5	13	30	
Toluene	53.6	1.25	50	0	107	37.51	130.49	48.3	10	30	
Dibromochloromethane	48.2	5	50	0	96.4	48.51	147.49	41.6	15	30	
Tetrachloroethene	54.4	5	50	0	109	62.51	134.49	49.4	9.6	30	
Chlorobenzene	51.4	5	50	0	103	69.51	130.49	45.5	12	30	
Ethylbenzene	53	1.25	50	0	106	69.51	130.49	47.5	11	30	
m,p-Xylene	52.8	1.25	50	0	106	64.51	139.49	50.7	4.2	30	
Bromoform	46.2	5	50	0	92.4	59.51	144.49	39.1	17	30	
o-Xylene	56.5	1.25	50	0	113	68.51	130.49	48.3	16	30	
1,1,2,2-Tetrachloroethane	48.7	5	50	0	97.4	66.51	134.49	42.9	13	30	
1,3-Dichlorobenzene	53.3	5	50	0	107	69.51	130.49	48	10	30	
1,4-Dichlorobenzene	53.7	5	50	0	107	69.51	130.49	48.6	10	30	
1,2-Dichlorobenzene	52.8	5	50	0	106	69.51	130.49	46.8	12	30	
Surr: 1,2-Dichloroethane-d4	47.3		50		94.7	69.51	130.49	47.1		0	
Surr: Toluene-d8	51.4		50		103	69.51	130.49	50.8		0	
Surr: 4-Bromofluorobenzene	52.9		50		106	69.51	130.49	53.6		0	

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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707104-01AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1710**	TestNo:	**SW8260B**		
Prep Date:	**7/17/2017**	RunNo:	**1215**	SeqNo:	**30274**		
Analysis Date:	**7/17/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	43.3	10	50	0	86.5	25.51	146.49				
Vinyl chloride	47.3	5	50	0	94.6	45.51	142.49				
Chloroethane	54	5	50	0	108	24.51	164.49				
Bromomethane	49.7	10	50	0	99.4	9.51	172.49				
Trichlorofluoromethane	53.7	5	50	0	107	31.51	164.49				
Acetone	807	50	1000	0	80.7	9.51	188.49				
1,1-Dichloroethene	49.4	5	50	0	98.8	61.51	133.49				
Dichloromethane	41.2	10	50	0	82.4	68.51	130.49				
trans-1,2-Dichloroethene	48.1	5	50	0	96.2	66.51	131.49				
1,1-Dichloroethane	47.9	5	50	0	95.9	66.51	130.49				
cis-1,2-Dichloroethene	43.4	5	50	0	86.8	69.51	130.49				
Chloroform	47.3	5	50	0	90.0	68.51	130.49				
1,2-Dichloroethane	44.8	5	50	0	89.5	63.51	139.49				
1,1,1-Trichloroethane	49.2	5	50	0	98.4	64.51	139.49				
Carbon tetrachloride	45.8	5	50	0	91.6	55.51	146.49				
Benzene	44.4	1.25	50	0	88.8	66.51	134.49				
1,2-Dichloropropane	46.2	5	50	0	92.4	68.51	134.49				
Trichloroethene	47.3	5	50	0	94.5	67.51	138.49				
Bromodichloromethane	42.7	5	50	0	85.4	57.51	147.49				
cis-1,3-Dichloropropene	37.6	5	50	0	75.1	60.51	130.49				
trans-1,3-Dichloropropene	40	5	50	0	80.0	61.51	131.49				
1,1,2-Trichloroethane	43.5	5	50	0	87.0	69.51	131.49				
Toluene	48.3	1.25	50	0	96.6	37.51	130.49				
Dibromochloromethane	41.6	5	50	0	83.1	48.51	147.49				
Tetrachloroethene	49.4	5	50	0	98.9	62.51	134.49				
Chlorobenzene	45.5	5	50	0	91.0	69.51	130.49				
Ethylbenzene	47.5	1.25	50	0	95.0	69.51	130.49				
m,p-Xylene	50.7	1.25	50	0	101	64.51	139.49				
Bromoform	39.1	5	50	0	78.3	59.51	144.49				
o-Xylene	48.3	1.25	50	0	96.6	68.51	130.49				
1,1,2,2-Tetrachloroethane	42.9	5	50	0	85.8	66.51	134.49				
1,3-Dichlorobenzene	48	5	50	0	96.1	69.51	130.49				
1,4-Dichlorobenzene	48.6	5	50	0	97.2	69.51	130.49				
1,2-Dichlorobenzene	46.8	5	50	0	93.7	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	47.1		50		94.2	69.51	130.49				
Surr: Toluene-d8	50.8		50		102	69.51	130.49				
Surr: 4-Bromofluorobenzene	53.6		50		107	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#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan **TestCode:** **VOC_W**

Sample ID:	**MB-1718**	SampType:	**MBLK**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**PBW**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30409**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	ND	2									
Vinyl chloride	ND	1									
Chloroethane	ND	1									
Bromomethane	ND	2									
Trichlorofluoromethane	ND	1									
Acetone	ND	10									
1,1-Dichloroethene	ND	1									
Dichloromethane	ND	2									
trans-1,2-Dichloroethene	ND	1									
1,1-Dichloroethane	ND	1									
cis-1,2-Dichloroethene	ND	1									
Chloroform	ND	1									
1,2-Dichloroethane	ND	1									
1,1,1-Trichloroethane	ND	1									
Carbon tetrachloride	ND	1									
Benzene	ND	0.25									
1,2-Dichloropropane	ND	1									
Trichloroethene	ND	1									
Bromodichloromethane	ND	1									
cis-1,3-Dichloropropene	ND	1									
trans-1,3-Dichloropropene	ND	1									
1,1,2-Trichloroethane	ND	1									
Toluene	ND	0.25									
Dibromochloromethane	ND	1									
Tetrachloroethene	ND	1									
Chlorobenzene	ND	1									
Ethylbenzene	ND	0.25									
m,p-Xylene	ND	0.25									
Bromoform	ND	1									
o-Xylene	ND	0.25									
1,1,2,2-Tetrachloroethane	ND	1									
1,3-Dichlorobenzene	ND	1									
1,4-Dichlorobenzene	ND	1									
1,2-Dichlorobenzene	ND	1									
Surr: 1,2-Dichloroethane-d4	9		10		90.0	69.51	130.49				
Surr: Toluene-d8	11		10		106	69.51	130.49				
Surr: 4-Bromofluorobenzene	9.9		10		99.3	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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**LCS-1718**	SampType:	**LCS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**LCSW**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30408**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	9.27	2	10	0	92.7	39.51	145.49				
Vinyl chloride	9.89	1	10	0	98.9	69.51	130.49				
Chloroethane	11	1	10	0	110	37.51	156.49				
Bromomethane	11.3	2	10	0	113	13.51	162.49				
Trichlorofluoromethane	11.1	1	10	0	111	45.51	154.49				
Acetone	167	10	200	0	83.7	21.51	188.49				
1,1-Dichloroethene	10.2	1	10	0	102	69.51	130.49				
Dichloromethane	8.62	2	10	0	86.2	68.51	130.49				
trans-1,2-Dichloroethene	10.4	1	10	0	104	69.51	130.49				
1,1-Dichloroethane	10.1	1	10	0	101	69.51	130.49				
cis-1,2-Dichloroethene	9.3	1	10	0	93.0	69.51	130.49				
Chloroform	9.45	1	10	0	94.5	69.51	130.49				
1,2-Dichloroethane	9.08	1	10	0	90.8	69.51	133.49				
1,1,1-Trichloroethane	10.2	1	10	0	102	69.51	135.49				
Carbon tetrachloride	9.6	1	10	0	96.0	62.51	143.49				
Benzene	9.31	0.25	10	0	93.1	69.51	130.49				
1,2-Dichloropropane	9.38	1	10	0	93.8	69.51	130.49				
Trichloroethene	10.1	1	10	0	101	67.51	138.49				
Bromodichloromethane	9.03	1	10	0	90.3	57.51	147.49				
cis-1,3-Dichloropropene	9.16	1	10	0	91.6	69.51	130.49				
trans-1,3-Dichloropropene	9.01	1	10	0	90.1	69.51	131.49				
1,1,2-Trichloroethane	9.09	1	10	0	90.9	69.51	130.49				
Toluene	10.1	0.25	10	0	101	69.51	130.49				
Dibromochloromethane	9.17	1	10	0	91.7	48.51	147.49				
Tetrachloroethene	10.8	1	10	0	108	69.51	130.49				
Chlorobenzene	9.64	1	10	0	96.4	69.51	130.49				
Ethylbenzene	9.97	0.25	10	0	99.7	69.51	130.49				
m,p-Xylene	10.1	0.25	10	0	101	64.51	139.49				
Bromoform	8.78	1	10	0	87.8	59.51	144.49				
o-Xylene	9.98	0.25	10	0	99.8	69.51	130.49				
1,1,2,2-Tetrachloroethane	9.03	1	10	0	90.3	69.51	130.49				
1,3-Dichlorobenzene	10.4	1	10	0	104	69.51	130.49				
1,4-Dichlorobenzene	11	1	10	0	110	69.51	130.49				
1,2-Dichlorobenzene	9.82	1	10	0	98.2	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	9.16		10		91.6	69.51	130.49				
Surr: Toluene-d8	10.3		10		103	69.51	130.49				
Surr: 4-Bromofluorobenzene	11		10		110	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

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

QC SUMMARY REPORT

WO#: **1707079**
28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707112-01AMSD**	SampType:	**MSD**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/19/2017**	RunNo:	**1226**	SeqNo:	**30432**		
Analysis Date:	**7/19/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	49.8	10	50	0	99.7	25.51	146.49	52.9	6	30	
Vinyl chloride	58	5	50	0	116	45.51	142.49	60	3.4	30	
Chloroethane	68.1	5	50	0	136	24.51	164.49	68	0.16	30	
Bromomethane	30.9	10	50	0	61.9	9.51	172.49	34.6	11	30	
Trichlorofluoromethane	62.2	5	50	0	124	31.51	164.49	60.8	2.3	30	
Acetone	834	50	1000	0	83.4	9.51	188.49	920	9.9	30	
1,1-Dichloroethene	55.4	5	50	0	111	61.51	133.49	56.8	2.4	30	
Dichloromethane	44.9	10	50	0	89.7	68.51	130.49	48.5	7.8	30	
trans-1,2-Dichloroethene	55.2	5	50	0	110	66.51	131.49	56.2	1.8	30	
1,1-Dichloroethane	52.5	5	50	0	105	66.51	130.49	55.3	5.3	30	
cis-1,2-Dichloroethene	47.9	5	50	0	95.9	69.51	130.49	50	4.2	30	
Chloroform	49.3	5	50	0	98.7	68.51	130.49	50.3	1.9	30	
1,2-Dichloroethane	46.2	5	50	0	90.0	63.51	139.49	48.5	4.9	30	
1,1,1-Trichloroethane	54.2	5	50	0	108	64.51	139.49	56	3.3	30	
Carbon tetrachloride	51.8	5	50	0	104	55.51	146.49	51.9	0.096	30	
Benzene	48.7	1.25	50	0	97.4	66.51	134.49	51	4.6	30	
1,2-Dichloropropane	48.5	5	50	0	97.0	68.51	134.49	49.9	2.8	30	
Trichloroethene	54.8	5	50	0	110	67.51	138.49	54.6	0.33	30	
Bromodichloromethane	47.4	5	50	0	94.7	57.51	147.49	49.4	4.2	30	
cis-1,3-Dichloropropene	46.5	5	50	0	93.1	60.51	130.49	44.4	4.7	30	
trans-1,3-Dichloropropene	46.9	5	50	0	93.8	61.51	131.49	47	0.23	30	
1,1,2-Trichloroethane	48.3	5	50	0	96.7	69.51	131.49	51.3	6	30	
Toluene	52.8	1.25	50	0	106	37.51	130.49	56.9	7.4	30	
Dibromochloromethane	45.9	5	50	0	91.8	48.51	147.49	50.8	10	30	
Tetrachloroethene	58.4	5	50	0	117	62.51	134.49	58.6	0.29	30	
Chlorobenzene	50.5	5	50	0	101	69.51	130.49	53.7	6.1	30	
Ethylbenzene	53.9	1.25	50	0	108	69.51	130.49	57.1	5.6	30	
m,p-Xylene	53.2	1.25	50	0	106	64.51	139.49	58.3	9.2	30	
Bromoform	43	5	50	0	86.0	59.51	144.49	47.8	11	30	
o-Xylene	52.2	1.25	50	0	104	68.51	130.49	55.4	5.9	30	
1,1,2,2-Tetrachloroethane	45.8	5	50	0	91.7	66.51	134.49	50.9	11	30	
1,3-Dichlorobenzene	57.9	5	50	0	116	69.51	130.49	55.6	4	30	
1,4-Dichlorobenzene	55.8	5	50	0	112	69.51	130.49	54.5	2.4	30	
1,2-Dichlorobenzene	50.6	5	50	0	101	69.51	130.49	52.5	3.6	30	
Surr: 1,2-Dichloroethane-d4	44.6		50		89.2	69.51	130.49	45.1		0	
Surr: Toluene-d8	51.7		50		103	69.51	130.49	52.2		0	
Surr: 4-Bromofluorobenzene	56		50		112	69.51	130.49	52.9		0	

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#: **1707079**

28-Jul-17

Client: Prima Environmental
Project: HA Chan
TestCode: **VOC_W**

Sample ID:	**1707112-01AMS**	SampType:	**MS**	TestCode:	**VOC_W**	Units:	**µg/L**
Client ID:	**BatchQC**	Batch ID:	**A1718**	TestNo:	**SW8260B**		
Prep Date:	**7/18/2017**	RunNo:	**1226**	SeqNo:	**30431**		
Analysis Date:	**7/18/2017**						

Analyte	Result	PQL	SPK Value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloromethane	52.9	10	50	0	106	25.51	146.49				
Vinyl chloride	60	5	50	0	120	45.51	142.49				
Chloroethane	68	5	50	0	136	24.51	164.49				
Bromomethane	34.6	10	50	0	69.3	9.51	172.49				
Trichlorofluoromethane	60.8	5	50	0	122	31.51	164.49				
Acetone	920	50	1000	0	92.0	9.51	188.49				
1,1-Dichloroethene	56.8	5	50	0	114	61.51	133.49				
Dichloromethane	48.5	10	50	0	97.0	68.51	130.49				
trans-1,2-Dichloroethene	56.2	5	50	0	112	66.51	131.49				
1,1-Dichloroethane	55.3	5	50	0	111	66.51	130.49				
cis-1,2-Dichloroethene	50	5	50	0	100	69.51	130.49				
Chloroform	50.3	5	50	0	101	68.51	130.49				
1,2-Dichloroethane	48.5	5	50	0	94.6	63.51	139.49				
1,1,1-Trichloroethane	56	5	50	0	112	64.51	139.49				
Carbon tetrachloride	51.9	5	50	0	104	55.51	146.49				
Benzene	51	1.25	50	0	102	66.51	134.49				
1,2-Dichloropropane	49.9	5	50	0	99.8	68.51	134.49				
Trichloroethene	54.6	5	50	0	109	67.51	138.49				
Bromodichloromethane	49.4	5	50	0	98.8	57.51	147.49				
cis-1,3-Dichloropropene	44.4	5	50	0	88.8	60.51	130.49				
trans-1,3-Dichloropropene	47	5	50	0	94.0	61.51	131.49				
1,1,2-Trichloroethane	51.3	5	50	0	103	69.51	131.49				
Toluene	56.9	1.25	50	0	114	37.51	130.49				
Dibromochloromethane	50.8	5	50	0	102	48.51	147.49				
Tetrachloroethene	58.6	5	50	0	117	62.51	134.49				
Chlorobenzene	53.7	5	50	0	107	69.51	130.49				
Ethylbenzene	57.1	1.25	50	0	114	69.51	130.49				
m,p-Xylene	58.3	1.25	50	0	117	64.51	139.49				
Bromoform	47.8	5	50	0	95.6	59.51	144.49				
o-Xylene	55.4	1.25	50	0	111	68.51	130.49				
1,1,2,2-Tetrachloroethane	50.9	5	50	0	102	66.51	134.49				
1,3-Dichlorobenzene	55.6	5	50	0	111	69.51	130.49				
1,4-Dichlorobenzene	54.5	5	50	0	109	69.51	130.49				
1,2-Dichlorobenzene	52.5	5	50	0	105	69.51	130.49				
Surr: 1,2-Dichloroethane-d4	45.1		50		90.2	69.51	130.49				
Surr: Toluene-d8	52.2		50		104	69.51	130.49				
Surr: 4-Bromofluorobenzene	52.9		50		106	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

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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Website: www.alpha-analytical.com

Definition Only

WO#: **1707079**

Date:

Definitions:

Report CC's Cindy Schreier

CHAIN-OF-CUSTODY RECORD

CA

Alpha Analytical, Inc.

255 Glendale Ave, #21 Sparks, Nevada 89431

TEL: (775) 355-1044 FAX: (775) 355-0406

WorkOrder: PES1707079
Report Due By: 26-Jul-17
EDD Required: NO

Report Attention: Cindy Schreier

Client:
Prima Environmental
5070 Robert J. Mathews Parkway
El Dorado Hills, CA 95762

TEL: 9169397300
FAX: 9169397398
ProjectNo: HA Chan

Date Received: 12-Jul-17

Alpha Sample ID	Client Sample ID	Matrix	Collection Date	No. of Bottles Alpha	Sub	TAT	Requested Tests 300_0_W	METALS_T_200_8	VOC_W					Sample Remarks
PES1707079-01	HA Chan Con-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-02	HA Chan AP-pH LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-03	HA Chan AP-pH HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-04	HA Chan AP-Fe-LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-05	HA Chan AP-Fe-HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-06	HA Chan KMnO4 LD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					
PES1707079-07	HA Chan KMnO4 HD-B	AQ	7/11/2017 11:30:00 AM	5	0	10	A - Cl	A - Fe, Mn	A - 8260/Acetone_Cs					

Comments:

	Signature	Print Name	Company	Date/Time
Logged in by:	K Murray	K Murray	Alpha Analytical, Inc.	7/12/17 1215

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

CHAIN OF CUSTODY

2876

Billing Information:

Company: PRIMA Env
Attn:
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: 775-355-0406

Satellite Service Centers:

Northern CA: 9891 Horn Road, Suite C, Rancho Cordova, CA 95827 — Phone: 916-366-9089
Southern CA: 1007 E. Dominguez St., Suite O, Carson, CA 90746 — Phone: 714-386-2901
Northern NV: Elko, NV 89801 — Phone: 775-388-7043
Southern NV: Las Vegas, NV 89120 — Phone: 702-281-4848

Page # 1 of 1

Consultant/ Client Info:

Company: PRIMA
Address:
City, State, Zip:

Job and Purchase Order Info:

Job # HA Chan
Job Name:
P.O. #:

Report Attention/Project Manager:

Name: Cindy Schreier
Email Address: data@primaenvironmental.com
Phone #:
Cell #: 916-939-7300

QC Deliverable Info:

EDD Required? Yes / No — EDF Required? Yes / No
Global ID:
Data Validation Packages: III or IV

Samples Collected from which State? (circle one) AR CA KS NV OR WA DOD Site Other

Time Sampled (HHMM)	Date Sampled (MM/DD)	Matrix* (See Key Below)	Lab ID Number (For Lab Use Only)	Sample Description	TAT	# Containers** (See Key Below)	Field Filtered? Yes	Field Filtered? No	VOCs-8260	Chloride	~~Chromium~~	Iron	Manganese						Remarks
1130	7/11	AQ	PES1707079-01	HAChan Con B	std				X	X		X	X						
			02	HA Chan AP-pH LD-B					X	X		X	X						
			03	HA Chan AP-pH HD-B					X	X		X	X						
			04	HA Chan AP-Fe-LD-B					X	X		X	X						
			05	HA Chan AP-Fe-HD-B					X	X		X	X						
			06	HA Chan KMnO4 LD-B					X	X		X	X						
			07	HA Chan KMnO4 HD-B					X	X		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 445.0636 (c) (2).

Sampled By:

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
PRIMA	7/11/17	~1630	FEDEX		
				7/12/17	1200

* Key: AQ - Aqueous AR-Air OT - Other So-Soil WA - Waste ** B - Brass L - Liter O - Orbo OT - Other P - Plastic S-Soil Jar T - Tedlar V - VOA

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 with this COC. The liability of the laboratory is limited to the amount paid for the report.

07/16

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706B49

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA-Chandler

Project Received: 06/23/2017

Analytical Report reviewed & approved for release on 07/03/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

McCampbell Analytical, Inc.
"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chandler
WorkOrder: 1706B49

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chandler
WorkOrder: 1706B49

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits
b1	Aqueous sample that contains greater than ~1 vol. % sediment
c2	Surrogate recovery outside of the control limits due to matrix interference.

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Received:	6/23/17 9:29	**Extraction Method:**	SW5030B
Date Prepared:	7/3/17	**Analytical Method:**	SW8260B
Project:	HA-Chandler	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
CON-A	**1706B49-001A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	50	100	07/03/2017 10:38

Surrogates	REC (%)	Limits	
Dibromofluoromethane	121	70-130	07/03/2017 10:38

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-pH-LD-A	**1706B49-002A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**590**	50	100	07/03/2017 11:16

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 11:16

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-pH-HD-A	**1706B49-003A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result		RL	DF	Date Analyzed
1,4-Dioxane	ND		0.50	1	07/03/2017 11:53
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	2	S	70-130		07/03/2017 11:53

Analyst(s): HK Analytical Comments: c2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-Fe-LD-A	**1706B49-004A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**220**	25	50	07/03/2017 12:31

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 12:31

Analyst(s): HK

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Received:	6/23/17 9:29	**Extraction Method:**	SW5030B
Date Prepared:	7/3/17	**Analytical Method:**	SW8260B
Project:	HA-Chandler	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Ap-Fe-HD-A	**1706B49-005A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**38**	2.5	5	07/03/2017 13:09

Surrogates	REC (%)	Limits	
Dibromofluoromethane	130	70-130	07/03/2017 13:09

Analyst(s): HK

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMnO4-LD-A	**1706B49-006A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**870**	50	100	07/03/2017 13:46

Surrogates	REC (%)	Limits	
Dibromofluoromethane	122	70-130	07/03/2017 13:46

Analyst(s): HK Analytical Comments: b1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMnO4-HD-A	**1706B49-007A**	**Water**	**06/20/2017 15:00**	**GC38**	**141431**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	50	100	07/03/2017 14:24

Surrogates	REC (%)	Limits	
Dibromofluoromethane	123	70-130	07/03/2017 14:24

Analyst(s): HK Analytical Comments: b1

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706B49
Date Prepared:	7/1/17	**BatchID:**	141431
Date Analyzed:	7/1/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA-Chandler	**Sample ID:**	MB/LCS/LCSD-141431

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	30.37		25	121	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	8.82	9.45	10	88	95	70-130	6.93	20
Surrogate Recovery								
Dibromofluoromethane	30.1	30.4	25	120	122	70-130	1.05	20

McCampbell Analytical, Inc.

1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706B49 **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA-Chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/23/2017
Date Logged: 06/23/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706B49-001	CON-A	Water	6/20/2017 15:00	☐	A											
1706B49-002	Ap-pH-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-003	Ap-pH-HD-A	Water	6/20/2017 15:00	☐	A											
1706B49-004	Ap-Fe-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-005	Ap-Fe-HD-A	Water	6/20/2017 15:00	☐	A											
1706B49-006	KMnO4-LD-A	Water	6/20/2017 15:00	☐	A											
1706B49-007	KMnO4-HD-A	Water	6/20/2017 15:00	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA-Chandler
Comments:

Work Order: 1706B49
QC Level: LEVEL 2
Date Logged: 6/23/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706B49-001A	CON-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-002A	Ap-pH-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-003A	Ap-pH-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-004A	Ap-Fe-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-005A	Ap-Fe-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	Present	☐	
1706B49-006A	KMnO4-LD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	1%+	☐	
1706B49-007A	KMnO4-HD-A	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/20/2017 15:00	5 days	1%+	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706B49

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #			
J-Flag / MDL		ESL		Cleanup Approved					Bottle Order #			
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)			EQuIS		

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Bill To:

Tele:

Project Name: HA-Chandler
Project #:
Project Location:
PO #
Sampler Signature: CL

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
Con-A	6/20/17	1500	2	AQ	HCl																X			
Ap-pH-LD-A	↓	↓	↓	↓	↓																X			
Ap-pH-HD-A																					X			
Ap-Fe-LD-A																					X			
Ap-Fe-HD-A																					X			
KMnO4-LD-A																					X			
KMnO4-HD-A																					X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Catherine Ryan / PRIMA	6/20/17	1800	FED EX	—	—
FedEx				6/23/17	0929

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 21.4 °C wet Initials

Page ___ of ___

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/23/2017 09:29**
Project Name:	**HA-Chandler**	Date Logged:	**6/23/2017**
		Received by:	Jena Alfaro
WorkOrder №:	**1706B49** Matrix: Water	Logged by:	Jena Alfaro
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 21.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

June 14, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
Ste. 300
El Dorado Hills, CA 95762

RE: Project: HA-Chand
Pace Project No.: 1289440

Dear Cindy Schreier:
Enclosed are the analytical results for sample(s) received by the laboratory on June 14, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott Forbes

Scott M Forbes
scott.forbes@pacelabs.com
(530) 297-4800
Project Manager

Enclosures

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Davis, CA 95618
(530) 297-4800

CERTIFICATIONS

Project:	HA-Chand
Pace Project No.:	1289440

Davis Cerification IDs

2795 Second Street Suite 300 Davis, CA 95618
North Dakota Certification #: R-214
Oregon Certification #: CA300002
Washington Certification #: C926-15a
California Certification #: 08263CA
Minnesota Department of Health Certification #: 006-999-465

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SAMPLE SUMMARY

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1289440001	**HA-chan-T0**	Water	06/13/17 18:10	06/14/17 10:00

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SAMPLE ANALYTE COUNT

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
1289440001	**HA-chan-T0**	EPA 7199	SJ1	1	PASI-DAV

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ANALYTICAL RESULTS

Project: HA-Chand
Pace Project No.: 1289440

Sample: HA-chan-T0 **Lab ID: 1289440001** Collected: 06/13/17 18:10 Received: 06/14/17 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
7199 Chromium, Hexavalent	Analytical Method: EPA 7199							
Chromium, Hexavalent	**4.6**	ug/L	1.0	1		06/14/17 12:47	18540-29-9	M1

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: HA-Chand
Pace Project No.: 1289440

QC Batch: 116460
QC Batch Method: EPA 7199
Analysis Method: EPA 7199
Analysis Description: 7199 Chromium, Hexavalent
Associated Lab Samples: 1289440001

METHOD BLANK: 459804
Matrix: Water
Associated Lab Samples: 1289440001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	1.0	06/14/17 12:34	

LABORATORY CONTROL SAMPLE: 459805

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 459806 459807

Parameter	Units	1289440001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	ug/L	4.6	5	5	10.0	10.4	107	116	90-110	4	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: HA-Chand
Pace Project No.: 1289440

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-DAV	Pace Analytical Services - Davis

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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Davis, CA 95618
(530) 297-4800

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HA-Chand
Pace Project No.: 1289440

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
1289440001	**HA-chan-T0**	EPA 7199	116460		

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Phone: Fax:
Requested Due Date/TAT: STD

Project Name: HA-Chand
Project Number:

Section C
Invoice Information:
Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

Page: 1 of 1

REGULATORY AGENCY
NPDES GROUND WATER DRINKING WATER
UST RCRA OTHER
Site Location STATE:

Section D
Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): Y

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test: Cr(VI)-7199	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	HA-Chan-T8	WT		~~6/15~~ 6/13/17	1810	Room	1	X								X		001

1289440

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Catherine Ligon / PRIMA	6/13/17	1330	FED EX						
				→ Pace	6/14/17	1000	1.9	Y	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Catherine Ligon
SIGNATURE of SAMPLER: Catherine Ligon
DATE Signed (MM/DD/YY): 6/13/17

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: **F-DAV-C-002-rev.02**	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Prima

Project #: WO#: 1289440 (1289440)

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other: _____

Tracking Number: 80999440 4059

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 **Type of Ice:** ☑ Wet ☐ Blue ☐ Dry Ice ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 1.2 **Cooler Temp Corrected(°C):** 1.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.7 **Date and Initials of Person Examining Contents:** DJ 06/14/17

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1. No time indicated on client
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2. label, SR will login at 1810
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3. per COC
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☐ Yes	☑ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Scott Turner **Date:** 6/14/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

June 28, 2017

Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Parkway
Ste. 300
El Dorado Hills, CA 95762

RE: Project: HA-Chander
Pace Project No.: 1290006

Dear Cindy Schreier:
Enclosed are the analytical results for sample(s) received by the laboratory on June 21, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Scott Forbes

Scott M Forbes
scott.forbes@pacelabs.com
(530) 297-4800
Project Manager

Enclosures

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without the written consent of Pace Analytical Services, LLC.

Pace Analytical Services, LLC
2795 Second Street - Suite 300
Davis, CA 95618
(530) 297-4800

SAMPLE SUMMARY

Project: HA-Chander
Pace Project No.: 1290006

Lab ID	Sample ID	Matrix	Date Collected	Date Received
1290006001	**Con-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006002	**Ap-pH-LD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006003	**Ap-pH-HD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006004	**Ap-Fe-LD-A**	Water	06/20/17 15:00	06/21/17 09:45
1290006005	**Ap-Fe-HD-A**	Water	06/20/17 15:00	06/21/17 09:45

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www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

Section B Required Project Information:

er No.: Project: HA-Chandler

er:

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

NPDES | GROUND WATER | DRINKING WATER
UST | RCRA | OTHER

Site Location STATE:

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED DATE	COLLECTED TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Cr(VI) 7199	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 1290006
	Con-A	WT		6/20/17	1500	Room	1	X									X		001
	Ap-pH-LD-A	↓		↓	↓	↓	1	X									X		002
	Ap-pH-HD-A	↓		↓	↓	↓	1	X									X		003
	Ap-Fe-LD-A	↓		↓	↓	↓	1	X									X		004
	Ap-Fe-HD-A	↓		↓	↓	↓	1	X									X		005

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Catherine Ligon / PRIMA	6/20/17	1500	FED EX / Pace	062117	0945	2.9	Y	N	Y

Electronic Data Deliverable (EDD): ☐ EQuIS (format) ☐ Excel

State Specific: ☐ CA EDF (Global ID: _____) ☐ WA EIM ☐ CA WriteOn (Site: _____) ☐ Other _____

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Catherine Ligon

SIGNATURE of SAMPLER: Catherine Ligon

DATE Signed (MM/DD/YY): 6/20/17

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 25Feb2015 Page 1 of 1
	Document No.: **F-DAV-C-002-rev.02**	Issuing Authority: Pace Davis, CA Quality Office

Sample Condition Upon Receipt

Client Name: Prima

Project #: WO#: 1290006 (1290006)

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ OnTrac ☐ Other:

Tracking Number: 8099 9440 4060

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

Thermom. Used: ☑ DA1434 ☐ DA2285 **Type of Ice:** ☐ Wet ☐ Blue ☐ Dry Ice ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read(°C): 2.2 **Cooler Temp Corrected(°C):** 2.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** +0.7 **Date and Initials of Person Examining Contents:** DJD062117

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out? DJD062117	☑ Yes	☑ No	☐ N/A	2. No TAT indicated
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☑ Yes	☐ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved container.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT DJD062117	☑ Yes	☑ No	☐ N/A	12. No times indicated on client labels, SR will login per COC times
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☑ No	☐ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Scott Jones **Date:** 8/21/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

June 28, 2017

CLS Work Order #: 17F0995
COC #:

Scott Forbes
Pace Analytical Services, Inc. - Davis
2795 Second St. Suite 300
Davis, CA 95616

Project Name: HA-Chander

Enclosed are the results of analyses for samples received by the laboratory on 06/23/17 11:47. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

Chain of Custody

Pace Analytical
www.pacelabs.com

17F0995

Workorder: 1290006 **Workorder Name:** HA-Chander **Results Requested By:** 6/28/2017

Report / Invoice To

Scott M Forbes
Pace Analytical Davis
2795 Second Street
Suite 300
Davis, CA 95618
Phone (530) 297-4800
Email: scott.forbes@pacelabs.com

CLS

Subcontract To

P.O. 1290006

State of Sample Origin: CA

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved						Requested Analysis: Hexavalent Chromium												LAB USE ONLY
1	Con-A	6/20/2017 15:00	1290006001	Water	1						X												
2	Ap-pH-LD-A	6/20/2017 15:00	1290006002	Water	1						X												
3	Ap-pH-HD-A	6/20/2017 15:00	1290006003	Water	1						X												
4	Ap-Fe-LD-A	6/20/2017 15:00	1290006004	Water	1						X												
5	Ap-Fe-HD-A	6/20/2017 15:00	1290006005	Water	1						X												

Transfers	Released By	Date/Time	Received By	Date/Time
1	Pace	062316 1146	[illegible]	6/23/17 1147 0.6
2				
3				

Comments

Cooler Temperature on Receipt _____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

10 mg/L Persulfate in Samples labeled "HD"

CLS LABS
SAMPLE RECEIVING EXCEPTION REPORTS

CLS Labs Job # 17F0995 - PINK.

Problem discovered by: GG. **Date:** 6/23/17.

Nature of problem

RECEIVED SAMPLES OUT OF HOLD FOR.
Cr 6 - NO PRESERVATION

Client contacted? Yes _____ **No** _____ **Spoke With:** _____

By whom: _____ **Date:** / / **Time:** _____ **HRS**

Client instructions:

Resolution of problem:

LOGGED IN REGARDLESS OF HOLD
TIME

H:\WillOrellana\SampleException.Doc

CALIFORNIA LABORATORY SERVICES

 06/28/17 13:49

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Con-A 1290006001 (17F0995-01) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.5**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-pH-LD-A 1290006002 (17F0995-02) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.2**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-pH-HD-A 1290006003 (17F0995-03) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**48**	10	µg/L	10	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-Fe-LD-A 1290006004 (17F0995-04) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**3.7**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1
Ap-Fe-HD-A 1290006005 (17F0995-05) Water Sampled: 06/20/17 15:00 Received: 06/23/17 11:47									
Hexavalent Chromium	**4.7**	1.0	µg/L	1	1704684	06/23/17	06/26/17	EPA 218.6	HT-1

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1704684 - General Prep										
Blank (1704684-BLK1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	ND	1.0	µg/L							
LCS (1704684-BS1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	4.79	1.0	µg/L	5.00		96	80-120			
LCS Dup (1704684-BSD1)				Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	5.50	1.0	µg/L	5.00		110	80-120	14	20	
Matrix Spike (1704684-MS1)		**Source: 17F0815-01**		Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	4.29	1.0	µg/L	5.00	ND	86	80-120			
Matrix Spike Dup (1704684-MSD1)		**Source: 17F0815-01**		Prepared: 06/23/17 Analyzed: 06/26/17						
Hexavalent Chromium	ND	1.0	µg/L	5.00	ND		80-120		20	QM-7

Pace Analytical Services, Inc. - Davis	Project: HA-Chander	
2795 Second St. Suite 300	Project Number: 1290006	**CLS Work Order #: 17F0995**
Davis, CA 95616	Project Manager: Scott Forbes	COC #:

Notes and Definitions

QM-7	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
HT-1	The sample was received outside of the EPA recommended holding time.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706178

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A- chandler

Project Received: 06/05/2017

Analytical Report reviewed & approved for release on 06/13/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A- chandler
WorkOrder: 1706178

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW3060A
Date Prepared:	6/8/17	**Analytical Method:**	SW7199
Project:	H&A- chandler	**Unit:**	mg/Kg

Hexavalent chromium by Alkaline Digestion and IC Analysis

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**IC2**	**140158**

Analytes	Result	RL	DF	Date Analyzed
Hexavalent chromium	ND	4.0	1	06/08/2017 19:17

Analyst(s): DP

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW9060A
Date Prepared:	6/12/17	**Analytical Method:**	SW9060A
Project:	H&A- chandler	**Unit:**	mg/kg

Total Organic Carbon (TOC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**WC_CNS**	**140310**

Analytes	Result	RL	DF	Date Analyzed
TOC	ND	200	1	06/12/2017 19:43

Analyst(s): RB

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/8/17	**BatchID:**	140158
Date Analyzed:	6/8/17 - 6/9/17	**Extraction Method:**	SW3060A
Instrument:	IC2	**Analytical Method:**	SW7199
Matrix:	Soil	**Unit:**	mg/Kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS-140158 1706188-001AMS/MSD

QC Summary Report for SW7199 (Hexavalent chromium)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Hexavalent chromium	ND	206	4.0	200	-	103	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Hexavalent chromium	196	193	200	ND	98	97	70-130	1.34	20

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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/12/17	**BatchID:**	140310
Date Analyzed:	6/12/17	**Extraction Method:**	SW9060A
Instrument:	WC_CNS	**Analytical Method:**	SW9060A
Matrix:	Soil	**Unit:**	mg/kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS-140310 1706273-001AMS/MSD

QC Summary Report for SW9060A

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TOC	ND	8140	200	8200	-	99	80-120

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TOC	NR	NR		32000	NR	NR	-	NR	-

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706178 **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A- chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/05/2017
Date Logged: 06/05/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706178-001	HA-ch-Su	Soil	5/31/2017 15:30	☐	A	A										

Test Legend:

1	7199_TTLC_S	2	cnsTOC_S	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Kena Ponce

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: H&A- chandler
Comments: 14Dioxane added 6/8/17 RUSH TAT

Work Order: 1706178
QC Level: LEVEL 2
Date Logged: 6/5/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706178-001A	HA-ch-Su	Soil	SW9060A (TOC)	1	8OZ GJ	☐	5/31/2017 15:30	5 days		☐	
			SW8260B (1,4-Dioxane) (SIM Mode)			☐		2 days		☐	
			SW7199 (Hexavalent chromium)			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706178

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
main@mccampbell.com

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD X | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Bill To:
Tele:
Project Name: H&A-Chandler
Project #:
Project Location:
PO #
Sampler Signature: Cathy Lin

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	TOC - 9060	Cr(VI) - 7199		
HA-ch-S0	5/31/17	1530	1	Soil	—																X	X		

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Cathy Lynn / PRIMA	5/31/17	1730	FED EX		
FED EX			[signature]	6/5/17	0928

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 20.8 °C Initials KP

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/5/2017 09:28**
Project Name:	**H&A- chandler**	Date Logged:	**6/5/2017**
		Received by:	
WorkOrder №:	**1706178** Matrix:	Logged by:	Kena Ponce
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 20.8°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706178 A

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A- chandler

Project Received: 06/05/2017

Analytical Report reviewed & approved for release on 06/13/2017 by:

Angela Rydelius,
Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A- chandler
WorkOrder: 1706178

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Received:	6/5/17 9:28	**Extraction Method:**	SW5030B
Date Prepared:	6/9/17	**Analytical Method:**	SW8260B
Project:	H&A- chandler	**Unit:**	mg/kg

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-ch-Su	**1706178-001A**	**Soil**	**05/31/2017 15:30**	**GC38**	**140263**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	ND	0.020	1	06/13/2017 11:43

Surrogates	REC (%)	Limits	
Dibromofluoromethane	101	70-130	06/13/2017 11:43
Benzene-d6	95	60-140	06/13/2017 11:43

Analyst(s): HK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706178
Date Prepared:	6/9/17	**BatchID:**	140263
Date Analyzed:	6/12/17 - 6/13/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	H&A- chandler	**Sample ID:**	MB/LCS/LCSD-140263 1706178-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.020	-	-	-
Surrogate Recovery					
Dibromofluoromethane	0.1246		0.12	100	70-130
Benzene-d6	0.1197		0.10	120	60-140

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	0.0366	0.0371	0.050	73	74	70-130	1.28	20
Surrogate Recovery								
Dibromofluoromethane	0.127	0.125	0.12	101	100	70-130	1.16	20
Benzene-d6	0.114	0.106	0.10	114	106	60-140	7.16	20

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,4-Dioxane	0.0376	0.0376	0.050	ND	75	75	70-130	0	20
Surrogate Recovery									
Dibromofluoromethane	0.124	0.125	0.12		99	100	70-130	1.14	20
Benzene-d6	0.114	0.117	0.10		114	117	60-140	2.32	20

McCampbell Analytical, Inc.
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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706178 A **ClientCode: PEM**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A- chandler

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 2 days;

Date Received: 06/05/2017
Date Logged: 06/05/2017
Date Add-On: 06/08/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706178-001	HA-ch-Su	Soil	5/31/2017 15:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_S	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Kena Ponce

Add-On Prepared By: Jena Alfaro

Comments: 14Dioxane added 6/8/17 RUSH TAT

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email data@primaenvironmental.com

Project: H&A- chandler
Comments: 14Dioxane added 6/8/17 RUSH TAT

Work Order: 1706178
QC Level: LEVEL 2
Date Logged: 6/5/2017
Date Add-On: 6/8/2017

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706178-001A	HA-ch-Su	Soil	SW8260B (1,4-Dioxane) (SIM Mode)	1	8OZ GJ	5/31/2017 15:30	2 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706178

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main@mccampbell.com

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #	
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Bill To:

Tele:

Project Name: H&A-Chandler Project #:

Project Location: PO #

Sampler Signature: Cathe Lin

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	TOC - 9060	Cr(VI) - 7199	14 Dioxane 8260 6/8/17 RUSH	
HA-ch-SU	5/31/17	1530	1	Soil	—																X	X	X	

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Catherine Lynn / PRIMA	5/31/17	1730	FED EX	—	—
FED EX	—	—	[signature]	6/5/17	0928

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 20.8 °C Initials KF

Page ___ of ___

McCampbell Analytical, Inc.

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Analytical Report

WorkOrder: 1706231

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA-Chan

Project Received: 06/06/2017

Analytical Report reviewed & approved for release on 06/08/2017 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA-Chan
WorkOrder: 1706231

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706231
Date Received:	6/6/17 9:48	**Extraction Method:**	SW5030B
Date Prepared:	6/8/17	**Analytical Method:**	SW8260B
Project:	HA-Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HAChan- Unt GW	**1706231-001A**	**Water**	**06/05/2017 17:30**	**GC38**	**140155**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**1300**	10	20	06/08/2017 16:21

Surrogates	REC (%)	Limits	
Dibromofluoromethane	114	70-130	06/08/2017 16:21

Analyst(s): AK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706231
Date Prepared:	6/8/17	**BatchID:**	140155
Date Analyzed:	6/8/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA-Chan	**Sample ID:**	MB/LCS/LCSD-140155

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	28.69		25	115	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	10.7	11.3	10	107	113	70-130	4.96	20
Surrogate Recovery								
Dibromofluoromethane	29.2	29.2	25	117	117	70-130	0	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706231 **ClientCode: PEM** **QuoteID: 5998**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA-Chan

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 2 days;
Date Received: 06/06/2017
Date Logged: 06/06/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706231-001	HAChan- Unt GW	Water	6/5/2017 17:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Tina Perez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA-Chan
Comments:

Work Order: 1706231
QC Level:
Date Logged: 6/6/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ■ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706231-001A	HAChan- Unt GW	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/5/2017 17:30	2 days	Trace	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706231

6

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

RUSH

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush	X	3 Day Rush		STD		Quote #	
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Report To: Cindy Schreier Bill To: PRIMA
Company: PRIMA
Email: data@primaenvironmental.com
Alt Email: Tele: 916-939-7300
Project Name: HA-Chan Project #:
Project Location: PO #
Sampler Signature: CS

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
+ HAChan-Unt GW	6-5-17	1730	2	AQ	HCl																X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
CS PRIMA	6/5/17	~1820	FedEx		
			[signature]	6/6/17	14:51

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 10.3 °C Initials TP

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received:	**6/6/2017 09:48**
Project Name:	**HA-Chan**	Date Logged:	**6/6/2017**
		Received by:	Tina Perez
WorkOrder №:	**1706231** Matrix: Water	Logged by:	Tina Perez
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 10.3°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR3 Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1706713

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: H&A-Channel

Project Received: 06/15/2017

Analytical Report reviewed & approved for release on 06/21/2017 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: H&A-Channel
WorkOrder: 1706713

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1706713
Date Received:	6/15/17 9:56	**Extraction Method:**	SW5030B
Date Prepared:	6/19/17	**Analytical Method:**	SW8260B
Project:	H&A-Channel	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
HA-Chan-T0	**1706713-001A**	**Water**	**06/13/2017 18:10**	**GC38**	**140742**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**1000**	50	100	06/19/2017 17:05

Surrogates	REC (%)	Limits	
Dibromofluoromethane	108	70-130	06/19/2017 17:05

Analyst(s): HK

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Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1706713
Date Prepared:	6/19/17	**BatchID:**	140742
Date Analyzed:	6/19/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	H&A-Channel	**Sample ID:**	MB/LCS/LCSD-140742

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	26.37		25	105	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	9.18	9.64	10	92	96	70-130	4.89	20
Surrogate Recovery								
Dibromofluoromethane	27.0	26.8	25	108	107	70-130	0.733	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1706713 **ClientCode: PEM** **QuoteID: 6157**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: H&A-Channel

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 06/15/2017
Date Logged: 06/15/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1706713-001	HA-Chan-T0	Water	6/13/2017 18:10	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Jena Alfaro

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: H&A-Channel
Comments:

Work Order: 1706713
QC Level:
Date Logged: 6/15/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ■ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1706713-001A	HA-Chan-T0	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	6/13/2017 18:10	5 days	Present	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 1706713

McCAMPBELL ANALYTICAL, INC.

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main@mccampbell.com

PRIMA ENVIRONMENTAL, Inc.
5070 Robert J. Mathews Pkwy, Ste 300
El Dorado Hills, CA 95762
PH: 916-939-7300 FAX: 916-939-7398
data@primaenvironmental.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #	
J-Flag / MDL		ESL		Cleanup Approved				Bottle Order #	
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		EQuIS

Bill To:

Tele:

Project Name: H&A - chand Project #:

Project Location: PO #

Sampler Signature:

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silca Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane			
HA-Chan-TØ	6/13/17	1810	2	AQ	HCl																X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
[signature] / PRIMA	6/14/17	1500	FED EX		
Fedex 8694 0808 1228			[signature]	6/15/17	956

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 6.2 °C Initials [initials]

Page ___ of ___

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Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**6/15/2017 09:56**
Project Name:	**H&A-Channel**	Date Logged:	**6/15/2017**
		Received by:	Jena Alfaro
WorkOrder №:	**1706713** Matrix: Water	Logged by:	Jena Alfaro
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 6.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1707379

Report Created for: Prima Environmental

5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762

Project Contact: Cindy Schreier
Project P.O.:
Project Name: HA Chan

Project Received: 07/12/2017

Analytical Report reviewed & approved for release on 07/19/2017 by:

Angela Rydelius,
Laboratory Manager

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Glossary of Terms & Qualifier Definitions

Client: Prima Environmental
Project: HA Chan
WorkOrder: 1707379

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Received:	7/12/17 9:41	**Extraction Method:**	SW5030B
Date Prepared:	7/19/17	**Analytical Method:**	SW8260B
Project:	HA Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
Con B	**1707379-001A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**880**	10	20	07/19/2017 13:00

Surrogates	REC (%)	Limits	
Dibromofluoromethane	108	70-130	07/19/2017 13:00

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-PH LD-B	**1707379-002A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**300**	2.5	5	07/19/2017 13:38

Surrogates	REC (%)	Limits	
Dibromofluoromethane	110	70-130	07/19/2017 13:38

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-PH HD-B	**1707379-003A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	ND	0.50	1	07/19/2017 00:21

Surrogates	REC (%)	Limits	
Dibromofluoromethane	116	70-130	07/19/2017 00:21

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-Fe LD-B	**1707379-004A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**440**	10	20	07/19/2017 00:59

Surrogates	REC (%)	Limits	
Dibromofluoromethane	111	70-130	07/19/2017 00:59

Analyst(s): JEM

(Cont.)

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Analytical Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Received:	7/12/17 9:41	**Extraction Method:**	SW5030B
Date Prepared:	7/19/17	**Analytical Method:**	SW8260B
Project:	HA Chan	**Unit:**	µg/L

1,4-Dioxane (SIM Mode)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AP-Fe HD-B	**1707379-005A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**7.2**	0.50	1	07/19/2017 01:37

Surrogates	REC (%)	Limits	
Dibromofluoromethane	126	70-130	07/19/2017 01:37

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMn04-LD-B	**1707379-006A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**820**	10	20	07/19/2017 14:16

Surrogates	REC (%)	Limits	
Dibromofluoromethane	107	70-130	07/19/2017 14:16

Analyst(s): JEM

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
KMn04-HD-B	**1707379-007A**	**Water**	**07/11/2017 11:30**	**GC38**	**142217**

Analytes	Result	RL	DF	Date Analyzed
1,4-Dioxane	**570**	10	20	07/19/2017 14:54

Surrogates	REC (%)	Limits	
Dibromofluoromethane	107	70-130	07/19/2017 14:54

Analyst(s): JEM

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Prima Environmental	**WorkOrder:**	1707379
Date Prepared:	7/18/17	**BatchID:**	142217
Date Analyzed:	7/18/17	**Extraction Method:**	SW5030B
Instrument:	GC38	**Analytical Method:**	SW8260B
Matrix:	Water	**Unit:**	µg/L
Project:	HA Chan	**Sample ID:**	MB/LCS/LCSD-142217

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
1,4-Dioxane	ND	0.50	-	-	-
Surrogate Recovery					
Dibromofluoromethane	27.93		25	112	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,4-Dioxane	9.38	9.80	10	94	98	70-130	4.33	20
Surrogate Recovery								
Dibromofluoromethane	28.0	28.2	25	112	113	70-130	0.857	20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1707379 **ClientCode: PEM** **QuoteID: 5998**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Cindy Schreier
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 300
El Dorado Hills, CA 95762
(916) 363-8798 FAX: (916) 363-8829

Email: data@primaenvironmental.com
cc/3rd Party:
PO:
ProjectNo: HA Chan

Bill to:
Accounts Payable
Prima Environmental
5070 Robert J. Mathews Pkwy, Suite 30
El Dorado Hills, CA 95762

Requested TAT: 5 days;
Date Received: 07/12/2017
Date Logged: 07/12/2017

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1707379-001	Con B	Water	7/11/2017 11:30	☐	A											
1707379-002	AP-PH LD-B	Water	7/11/2017 11:30	☐	A											
1707379-003	AP-PH HD-B	Water	7/11/2017 11:30	☐	A											
1707379-004	AP-Fe LD-B	Water	7/11/2017 11:30	☐	A											
1707379-005	AP-Fe HD-B	Water	7/11/2017 11:30	☐	A											
1707379-006	KMn04-LD-B	Water	7/11/2017 11:30	☐	A											
1707379-007	KMn04-HD-B	Water	7/11/2017 11:30	☐	A											

Test Legend:

1	8260B_14DIOXANE_W	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: PRIMA ENVIRONMENTAL
Client Contact: Cindy Schreier
Contact's Email: data@primaenvironmental.com

Project: HA Chan
Comments:

Work Order: 1707379
QC Level:
Date Logged: 7/12/2017

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1707379-001A	Con B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-002A	AP-PH LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-003A	AP-PH HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-004A	AP-Fe LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-005A	AP-Fe HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	None	☐	
1707379-006A	KMn04-LD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	
1707379-007A	KMn04-HD-B	Water	SW8260B (1,4-Dioxane) (SIM Mode)	2	VOA w/ HCl	☐	7/11/2017 11:30	5 days	Present	☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

1707379 MAI Work Order # ~~1707391~~

6

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | EQuIS

Report To: Cindy Schreir Bill To: PRIMA Env
Company: PRIMA Env
Email: datacprimaenvironmental.com
Alt Email: Tele: 916-939-7300
Project Name: HA Chan Project #:
Project Location: PO #
Sampler Signature:

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1,4-Dioxane 8260 SIM			
+ Con B	7/11/17	1130	2	water	HCl																X			
+ AP-pH LD-B			2																		X			
+ AP-pH HD-B			2																		X			
+ AP-Fe LD-B			2																		X			
✓ AP-Fe HD-B			2																		X			
+ ~~AP~~ KMnO4-LD-B			2																		X			
+ KMnO4-HD-B			2																		X			

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E2008.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions: Quote 5998

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
~~FedEx~~ PRIMA	7/11/17	~1630	FedEx		
CAS			[illegible]	7/12	0941

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 7.4 °C Initials

WET ICE

Page ___ of ___

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**Prima Environmental**	Date and Time Received	**7/12/2017 09:41**
Project Name:	**HA Chan**	Date Logged:	**7/12/2017**
		Received by:	Agustina Venegas
WorkOrder №:	**1707379** Matrix: Water	Logged by:	Agustina Venegas
Carrier:	FedEx		

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Sample IDs noted by Client on COC?	Yes ☑	No ☐	
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐	
Sampler's name noted on COC?	Yes ☑	No ☐	

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	NA ☐
Sample/Temp Blank temperature	Temp: 7.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	NA ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	
	(Ice Type: WET ICE)		

UCMR Samples:

Total Chlorine tested and acceptable upon receipt for EPA 522?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt for EPA 218.7, 300.1, 537, 539?	Yes ☐	No ☐	NA ☑

Comments:

PRIMA ENVIRONMENTAL INC.

5070 Robert J. Mathews Parkway, Suite 300
El Dorado Hills, CA 95762
(916) 939-7300; (916) 939-7398 Fax
www.primaenvironmental.com

CHAIN of CUSTODY

Project Manager: BRUCE TRAVERS
Project Name: PLYMOUTH TUBE CHANDLER
Job Number: 128159-003 TASK 9
Sampler Signature:

Phone: 602-760-2461
~~Fax~~ CELL: 480-244-5890
Email: BTRAVERS@HALEYALDRICH.COM
TAT:

SAMPLE ID	Date	Time	Matrix	# Containers	Analysis: TREATABILITY STUDY 8/30/16 PROPOSAL										Comments
PT-6D	8-27-14		S	2	X	X									SOIL FOR TREATABILITY STUDY 8/30/16 PROPOSAL Two 5 gal buckets shipped.

Special Instructions	Relinquished by:		Received by:
SOIL FOR PROPOSAL DATED AUGUST 30, 2016. HALEY & ALDRICH - PLYMOUTH TUBE, CHANDLER	Company HALEY & ALDRICH	Date 5-24-17	Company
	Printed Name Chad Price	Time 14:30	Printed Name
	Signature		Signature
	Relinquished by:		**Received by:**
	Company	Date 5/25/17	Company PRIMA
	Printed Name	Time 0940	Printed Name Catherine Liguori
	Signature		Signature

Matrix key: S - soil/sediment; W - water; OT - other

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CHAIN of CUSTODY

Project Manager: BRUCE TRAVERS
Project Name: PLYMOUTH TUBE CHANDLER
Job Number: 128159-003 TASK 9
Sampler Signature:

Phone: 602-760-2461
CELL ~~Fax~~: 480-244-5890
Email: BTRAVERS@HALEYALDRICH.COM
TAT:

SAMPLE ID	Date	Time	Matrix	# Containers	TREATABILITY STUDY 8/30/16 PROPOSAL										Comments
															in good condition & on ice
LB-7R	5-24-17	10:50	W	20	X	X									20 - 1L BOTTLES OF GROUNDWATER FROM MONITOR WELL LB-7R FOR TREATABILITY STUDY 8/30/16 PROPOSAL
															4 total coolers!

Special Instructions	Relinquished by:		Received by:
GROUNDWATER FOR PROPOSAL DATED AUGUST 30, 2016. HALEY & ALDRICH - PLYMOUTH TUBE, CHANDLER	Company HALEY & ALDRICH	Date 5-24-17	Company ~~Company~~
	Printed Name Chad Price	Time 14:30	Printed Name
	Signature 14:30		Signature
	Relinquished by:		**Received by:**
	Company	Date 5/25/17	Company PRIMA
	Printed Name	Time 0940	Printed Name Catherine Liguori
	Signature		Signature

Matrix key: S - soil/sediment; W - water; OT - other

SGS ACCUTEST IS PART OF SGS, THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.

e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich - Phoenix, AZ

Plymouth Tube Groundwater Monitoring - Chandler, AZ

128159.002

SGS Accutest Job Number: TD6115

Sampling Date: 07/11/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: **44**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2016-170) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **6**
Section 4: Sample Results **7**
4.1: TD6115-1: ISCO-1-D-98-071117 8
4.2: TD6115-2: ISCO-1-S-85-071117 12
4.3: TD6115-3: TRIP BLANK 16
Section 5: Misc. Forms **19**
5.1: Arizona Qualifiers 20
5.2: Chain of Custody 21
Section 6: GC/MS Volatiles - QC Data Summaries **25**
6.1: Method Blank Summary 26
6.2: Blank Spike Summary 30
6.3: Matrix Spike/Matrix Spike Duplicate Summary 34
Section 7: Misc. Forms (SGS Accutest Southeast) **38**
7.1: Chain of Custody 39
Section 8: GC/MS Volatiles - QC Data (SGS Accutest Southeast) **41**
8.1: Method Blank Summary 42
8.2: Blank Spike Summary 43
8.3: Matrix Spike/Matrix Spike Duplicate Summary 44

SGS Accutest

Sample Summary

Haley & Aldrich - Phoenix, AZ

Job No: TD6115

Plymouth Tube Groundwater Monitoring - Chandler, AZ
Project No: 128159.002

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD6115-1	07/11/17	07:05		07/12/17	AQ	Ground Water	ISCO-1-D-98-071117
TD6115-2	07/11/17	08:15		07/12/17	AQ	Ground Water	ISCO-1-S-85-071117
TD6115-3	07/11/17	00:00		07/12/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich - Phoenix, AZ	**Job No**	TD6115
Site:	Plymouth Tube Groundwater Monitoring - Chandler, AZ	**Report Date**	7/18/2017 3:58:35 PM

2 Samples were collected on 07/11/2017 and received intact at Accutest on 07/12/2017 and properly preserved in 1 cooler at 1.9 Deg C. The samples received an Accutest job number of TD6115. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1772

- All data for batch F:MS37795 was analyzed at SGS Accutest, Fl.

Volatiles by GCMS By Method SW846 8260C

Matrix: AQ **Batch ID:** VG2379

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD6156-6MS, TD6156-6MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Methyl bromide are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Methyl bromide are outside control limits. Probable cause due to matrix interference.
- TD6115-1 for Chloroform: AZ:E4

Matrix: AQ **Batch ID:** VG2383

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD6115-1MS, TD6115-1MSD were used as the QC samples indicated.
- TD6115-2: AZ:D2
- TD6115-1: AZ:D2

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job**	TD6115
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring -	**Report**	7/18/2017 8:39:44

2 Samples were collected on 07/11/2017 and were received at SGS Accutest Southeast (SASE) on 07/13/2017 properly preserved, at 3 Deg. C and intact. These Samples received an SASE job number of TD6115. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1772

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA45756-1MS, FA45756-1MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

Date: July 18, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD6115
Account: Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Collected: 07/11/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD6115-1	**ISCO-1-D-98-071117**					
1,4-Dioxane [a]		18.8	1.0	0.30	ug/l	SW846 8260B BY SIM
Chloroform [b]		0.30 J	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene		44.9	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene [c]		238	2.5	1.5	ug/l	SW846 8260C
TD6115-2	**ISCO-1-S-85-071117**					
1,4-Dioxane [a]		92.3	2.0	0.60	ug/l	SW846 8260B BY SIM
Chloroform		0.71	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethane		1.1	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene [c]		166	5.0	3.0	ug/l	SW846 8260C
1,2-Dichloroethane		0.51	0.50	0.30	ug/l	SW846 8260C
Tetrachloroethylene		0.57	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene [c]		799	5.0	3.0	ug/l	SW846 8260C
TD6115-3	**TRIP BLANK**					

No hits reported in this sample.

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) AZ:E4
(c) AZ:D2

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0274635.D	1	07/14/17 20:59	ZQ	n/a	n/a	VG2379
Run #2 [a]	G0274684.D	5	07/17/17 13:39	ZQ	n/a	n/a	VG2383

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform [b]	0.30	0.50	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	44.9	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	238 [c]	2.5	1.5	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	95%	98%	68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	103%	102%	80-119%
460-00-4	4-Bromofluorobenzene	97%	98%	72-126%

(a) AZ:D2
(b) AZ:E4
(c) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-071117		
Lab Sample ID:	TD6115-1	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z47021.D	1	07/14/17 11:16	AFL	n/a	n/a	F:VZ1772
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	18.8	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	112%		74-125%
2037-26-5	Toluene-D8	107%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0274636.D	1	07/14/17 21:24	ZQ	n/a	n/a	VG2379
Run #2 [a]	G0274685.D	10	07/17/17 14:03	ZQ	n/a	n/a	VG2383

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	0.71	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	1.1	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	166 [b]	5.0	3.0	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	0.51	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	0.57	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	799 [b]	5.0	3.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	95%	98%	68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	104%	104%	80-119%
460-00-4	4-Bromofluorobenzene	98%	98%	72-126%

(a) AZ:D2
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-071117		
Lab Sample ID:	TD6115-2	**Date Sampled:**	07/11/17
Matrix:	AQ - Ground Water	**Date Received:**	07/12/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z47033.D	2	07/14/17 15:32	AFL	n/a	n/a	F:VZ1772
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	92.3	2.0	0.60	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	107%		74-125%
2037-26-5	Toluene-D8	104%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD6115-3	**Date Sampled:**	07/11/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0274616.D	1	07/14/17 13:14	ZQ	n/a	n/a	VG2379
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD6115-3	**Date Sampled:**	07/11/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	94%		68-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD6115-3	**Date Sampled:**	07/11/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/12/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # 7796 0668 3315
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest Job # TD6115

Client / Reporting Information

Company Name: Haley & Aldrich
Street Address: 400 E. Van Buren St.
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers E-mail: btravers@haleyaldrich.com
Phone #: 480-244-5891 Fax #:
Sampler(s) Name(s): Chad Price & Drew Brewer Phone #:

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 126159-002
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analyses

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank

SGS Accutest Sample #	Field ID / Point of Collection	Collection Date	Time	Sampled By	Matrix	# of bottles	HCl	NaOH	ZnAc/NaOH	HNO3	H2SO4	NONE	DI Water	MeOH	TSP	NaHSO4	ENCORE	OTHER	8260B	8260SIM (1,4-Dioxane)	LAB USE ONLY
1	ISCO-1-D-98-071117	7-11-17	0705	CP DB	GW	6	6												X	X	
2	ISCO-1-S-85-071117	7-11-17	0815	CP DB	GW	6	6												X	X	
3	Trip Blank					2	2												X		

Turnaround Time (Business days)

- ☐ Standard
- ☒ 5 Day *RUSH*
- ☐ 4 Day *RUSH*
- ☐ 3 Day *RUSH*
- ☐ 2 Day *RUSH*
- ☐ 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULT1 (Level 3+4)
- ☐ REDT1 (Level 3+4)
- ☐ Commercial "C"
- ☐ TRRP
- ☐ EDD Format
- ☐ Other _____

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC & Surrogate Summary

Form: SM021-0

Comments / Special Instructions: Possible High Concentrations

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1	10:50 7/11/17		7/11/17 1850		7/11/17 1630	Fedex	
3 Fedex		3	1030 7/12/17				
Relinquished by: 5	Date Time:	Received By: 5	Date Time:	Custody Seal #	Intact / Not intact	Preserved where applicable	On Ice ☑ Cooler Temp. 1.9

TD6115: Chain of Custody
Page 1 of 4

SGS ACCUTEST

COOLER TEMP FORM

TC# TD6115

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 7-12-17

Client: Haley & Aldrich

Cooler Number:

Thermometer ID: JR9 CF, °C 0.0 Corrected Temp, °C 1.9

SAMPLES CONTAINED IN COOLER

ORIGIN ID:MSCA (480) 275-8931
BETH PROFFITT
ACCUTEST TEMPE SERVICE CENTER
1741 W. UNIVERSITY DR.
SUITE 149
TEMPE, AZ 85281
UNITED STATES US

SHIP DATE: 11JUL17
ACTWGT: 20.00 LB
CAD: 104695527/INET3850
DIMS: 18x16x18 IN
BILL RECIPIENT

TO SAMPLE RECEIVING
ACCUTEST LABORATORIES
SAM HOUSTON PKY W
HOUSTON TX 77071
(713) 271-4700 REF: SAMPLES
INV:
PO: DEPT:

5/6J1/C0C2/53C1

FedEx Express

WED - 12 JUL HOLD
PRIORITY OVERNIGHT
HLD
SGRA
IAH
TX-US

TRK# 0201 7796 0668 3375

AB SGRA

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet

ACCUTEST
Initial [illegible] Date 7/11/17

Rev 10/24/2016

TD6115: Chain of Custody
Page 2 of 4

SGS Accutest Sample Receipt Summary

Job Number: TD6115 **Client:** HALEY& ADLRICH **Project:** PLYMOUTH TUBE

Date / Time Received: 7/12/2017 10:30:00 AM **Delivery Method:** **Airbill #'s:** 779606683375

No. Coolers: 1 **Therm ID:** IR9; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (1.9/1.9);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑	☐	☐	☑	☐
2. Trip Blank listed on COC:	☑	☐	☐		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Sample Receipt Log

Job #: TD6115 **Date / Time Received:** 7/12/2017 10:30:00 AM 10:3 **Initials:** DS

Client: HALEY& ADLRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD6115-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
1	TD6115-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	1.9	0	1.9
	TD6115-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD6115-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-MB	G0274615.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-MB	G0274615.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	72-122%

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-MB	G0274615.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	94%	68-124%
2037-26-5	Toluene-D8	103%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

Method Blank Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2383-MB	G0274678.D	1	07/17/17	ZQ	n/a	n/a	VG2383

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2

CAS No.	Compound	Result	RL	MDL	Units	Q
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	98%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-BS	G0274613.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	96.0	77	46-129
71-43-2	Benzene	25	24.3	97	68-119
108-86-1	Bromobenzene	25	24.4	98	71-119
74-97-5	Bromochloromethane	25	22.4	90	71-118
75-27-4	Bromodichloromethane	25	23.0	92	72-118
75-25-2	Bromoform	25	24.3	97	54-123
104-51-8	n-Butylbenzene	25	24.2	97	66-123
135-98-8	sec-Butylbenzene	25	23.3	93	72-123
98-06-6	tert-Butylbenzene	25	22.2	89	70-124
108-90-7	Chlorobenzene	25	22.9	92	74-120
75-00-3	Chloroethane	25	22.1	88	61-132
67-66-3	Chloroform	25	22.0	88	73-122
95-49-8	o-Chlorotoluene	25	22.7	91	71-122
106-43-4	p-Chlorotoluene	25	22.3	89	73-120
56-23-5	Carbon tetrachloride	25	21.5	86	73-133
75-34-3	1,1-Dichloroethane	25	23.2	93	72-121
75-35-4	1,1-Dichloroethylene	25	23.2	93	67-140
563-58-6	1,1-Dichloropropene	25	22.8	91	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	22.1	88	57-133
106-93-4	1,2-Dibromoethane	25	23.2	93	69-121
107-06-2	1,2-Dichloroethane	25	21.8	87	68-121
78-87-5	1,2-Dichloropropane	25	22.2	89	72-116
142-28-9	1,3-Dichloropropane	25	21.9	88	70-118
108-20-3	Di-Isopropyl ether	25	22.8	91	67-117
594-20-7	2,2-Dichloropropane	25	23.9	96	57-141
124-48-1	Dibromochloromethane	25	23.4	94	68-119
75-71-8	Dichlorodifluoromethane	25	23.9	96	29-182
156-59-2	cis-1,2-Dichloroethylene	25	22.8	91	72-117
10061-01-5	cis-1,3-Dichloropropene	25	24.0	96	71-118
541-73-1	m-Dichlorobenzene	25	22.9	92	73-117
95-50-1	o-Dichlorobenzene	25	22.4	90	71-117
106-46-7	p-Dichlorobenzene	25	21.9	88	71-116
156-60-5	trans-1,2-Dichloroethylene	25	23.0	92	68-124
10061-02-6	trans-1,3-Dichloropropene	25	25.7	103	72-127
100-41-4	Ethylbenzene	25	24.9	100	71-117
637-92-3	Ethyl tert-Butyl Ether	25	22.9	92	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-BS	G0274613.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	107	86	49-124
87-68-3	Hexachlorobutadiene	25	22.8	91	62-143
98-82-8	Isopropylbenzene	25	23.4	94	74-141
99-87-6	p-Isopropyltoluene	25	25.9	104	72-126
108-10-1	4-Methyl-2-pentanone	125	105	84	54-122
74-83-9	Methyl bromide	25	27.0	108	53-138
74-87-3	Methyl chloride	25	25.2	101	50-145
74-95-3	Methylene bromide	25	22.4	90	71-117
75-09-2	Methylene chloride	25	24.6	98	60-125
78-93-3	Methyl ethyl ketone	125	113	90	51-129
1634-04-4	Methyl Tert Butyl Ether	25	22.7	91	65-119
91-20-3	Naphthalene	25	27.6	110	53-139
103-65-1	n-Propylbenzene	25	23.1	92	72-123
100-42-5	Styrene	25	25.6	102	74-119
994-05-8	Tert-Amyl Methyl Ether	25	22.7	91	63-119
75-65-0	Tert Butyl Alcohol	250	219	88	45-146
630-20-6	1,1,1,2-Tetrachloroethane	25	24.0	96	74-119
71-55-6	1,1,1-Trichloroethane	25	21.9	88	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	22.5	90	62-121
79-00-5	1,1,2-Trichloroethane	25	23.2	93	70-119
87-61-6	1,2,3-Trichlorobenzene	25	25.4	102	44-144
96-18-4	1,2,3-Trichloropropane	25	22.0	88	61-124
120-82-1	1,2,4-Trichlorobenzene	25	25.0	100	57-132
95-63-6	1,2,4-Trimethylbenzene	25	24.5	98	70-121
108-67-8	1,3,5-Trimethylbenzene	25	24.5	98	66-119
127-18-4	Tetrachloroethylene	25	22.6	90	72-132
108-88-3	Toluene	25	24.4	98	73-119
79-01-6	Trichloroethylene	25	22.5	90	73-121
75-69-4	Trichlorofluoromethane	25	21.4	86	46-152
75-01-4	Vinyl chloride	25	22.8	91	54-126
1330-20-7	Xylene (total)	75	71.3	95	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	72-122%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2379-BS	G0274613.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	94%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2383-BS	G0274676.D	1	07/17/17	ZQ	n/a	n/a	VG2383

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
75-35-4	1,1-Dichloroethylene	25	25.2	101	67-140
79-01-6	Trichloroethylene	25	23.6	94	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	97%	68-124%
2037-26-5	Toluene-D8	103%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6156-6MS	G0274625.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6MSD	G0274626.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6	G0274617.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	TD6156-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		125	96.7	77	125	92.8	74	4	46-129/25
71-43-2	Benzene	ND		25	27.4	110	25	26.3	105	4	68-119/12
108-86-1	Bromobenzene	ND		25	27.0	108	25	26.6	106	1	71-119/12
74-97-5	Bromochloromethane	ND		25	24.8	99	25	23.7	95	5	71-118/13
75-27-4	Bromodichloromethane	ND		25	25.0	100	25	24.3	97	3	72-118/16
75-25-2	Bromoform	ND		25	25.3	101	25	24.9	100	2	54-123/17
104-51-8	n-Butylbenzene	ND		25	27.4	110	25	26.4	106	4	66-123/14
135-98-8	sec-Butylbenzene	ND		25	26.9	108	25	26.0	104	3	72-123/13
98-06-6	tert-Butylbenzene	ND		25	25.6	102	25	24.9	100	3	70-124/15
108-90-7	Chlorobenzene	ND		25	25.2	101	25	24.9	100	1	74-120/12
75-00-3	Chloroethane	ND		25	29.4	118	25	29.2	117	1	61-132/16
67-66-3	Chloroform	ND		25	24.9	100	25	23.9	96	4	73-122/13
95-49-8	o-Chlorotoluene	ND		25	25.5	102	25	24.7	99	3	71-122/12
106-43-4	p-Chlorotoluene	ND		25	25.4	102	25	24.5	98	4	73-120/12
56-23-5	Carbon tetrachloride	ND		25	25.1	100	25	24.3	97	3	73-133/20
75-34-3	1,1-Dichloroethane	ND		25	26.4	106	25	25.4	102	4	72-121/14
75-35-4	1,1-Dichloroethylene	ND		25	27.6	110	25	26.4	106	4	67-140/18
563-58-6	1,1-Dichloropropene	ND		25	27.0	108	25	25.4	102	6	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		25	23.2	93	25	23.1	92	0	57-133/23
106-93-4	1,2-Dibromoethane	ND		25	25.0	100	25	24.2	97	3	69-121/13
107-06-2	1,2-Dichloroethane	ND		25	23.8	95	25	23.1	92	3	68-121/12
78-87-5	1,2-Dichloropropane	ND		25	24.7	99	25	24.0	96	3	72-116/12
142-28-9	1,3-Dichloropropane	ND		25	23.8	95	25	22.9	92	4	70-118/12
108-20-3	Di-Isopropyl ether	ND		25	25.0	100	25	23.9	96	4	67-117/13
594-20-7	2,2-Dichloropropane	ND		25	25.9	104	25	24.8	99	4	57-141/16
124-48-1	Dibromochloromethane	ND		25	25.5	102	25	24.9	100	2	68-119/15
75-71-8	Dichlorodifluoromethane	ND		25	33.2	133	25	32.4	130	2	29-182/23
156-59-2	cis-1,2-Dichloroethylene	ND		25	25.9	104	25	24.7	99	5	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		25	25.9	104	25	25.1	100	3	71-118/18
541-73-1	m-Dichlorobenzene	ND		25	25.4	102	25	24.8	99	2	73-117/12
95-50-1	o-Dichlorobenzene	ND		25	24.7	99	25	24.2	97	2	71-117/11
106-46-7	p-Dichlorobenzene	ND		25	24.3	97	25	23.7	95	3	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		25	26.6	106	25	25.4	102	5	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		25	27.3	109	25	26.4	106	3	72-127/17
100-41-4	Ethylbenzene	ND		25	27.9	112	25	27.1	108	3	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		25	24.1	96	25	23.3	93	3	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6156-6MS	G0274625.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6MSD	G0274626.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6	G0274617.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Compound	TD6156-6 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		125	114	91	125	112	90	2	49-124/21
87-68-3	Hexachlorobutadiene	ND		25	24.8	99	25	24.8	99	0	62-143/18
98-82-8	Isopropylbenzene	ND		25	27.0	108	25	26.2	105	3	74-141/13
99-87-6	p-Isopropyltoluene	ND		25	29.5	118	25	28.4	114	4	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		125	112	90	125	110	88	2	54-122/20
74-83-9	Methyl bromide	ND		25	35.7	143*	25	35.4	142*	1	53-138/16
74-87-3	Methyl chloride	ND		25	34.1	136	25	33.0	132	3	50-145/17
74-95-3	Methylene bromide	ND		25	24.2	97	25	23.5	94	3	71-117/12
75-09-2	Methylene chloride	ND		25	23.9	96	25	22.9	92	4	60-125/16
78-93-3	Methyl ethyl ketone	ND		125	112	90	125	101	81	10	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		25	23.5	94	25	22.9	92	3	65-119/13
91-20-3	Naphthalene	ND		25	30.3	121	25	29.3	117	3	53-139/28
103-65-1	n-Propylbenzene	ND		25	26.7	107	25	25.8	103	3	72-123/13
100-42-5	Styrene	ND		25	28.3	113	25	27.4	110	3	74-119/19
994-05-8	Tert-Amyl Methyl Ether	ND		25	23.5	94	25	22.9	92	3	63-119/12
75-65-0	Tert Butyl Alcohol	ND		250	197	79	250	196	78	1	45-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		25	26.4	106	25	25.6	102	3	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		25	25.2	101	25	24.1	96	4	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		25	24.0	96	25	23.9	96	0	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		25	24.8	99	25	24.1	96	3	70-119/13
87-61-6	1,2,3-Trichlorobenzene	ND		25	26.9	108	25	26.6	106	1	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		25	23.4	94	25	23.5	94	0	61-124/16
120-82-1	1,2,4-Trichlorobenzene	ND		25	26.6	106	25	26.4	106	1	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		25	28.0	112	25	27.4	110	2	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		25	28.0	112	25	27.0	108	4	66-119/15
127-18-4	Tetrachloroethylene	ND		25	26.5	106	25	25.5	102	4	72-132/14
108-88-3	Toluene	ND		25	27.5	110	25	26.6	106	3	73-119/13
79-01-6	Trichloroethylene	ND		25	26.2	105	25	25.1	100	4	73-121/13
75-69-4	Trichlorofluoromethane	ND		25	29.0	116	25	28.3	113	2	46-152/25
75-01-4	Vinyl chloride	ND		25	30.2	121	25	30.3	121	0	54-126/17
1330-20-7	Xylene (total)	ND		75	80.1	107	75	77.2	103	4	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD6156-6	Limits
1868-53-7	Dibromofluoromethane	100%	99%	99%	72-122%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6156-6MS	G0274625.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6MSD	G0274626.D	1	07/14/17	ZQ	n/a	n/a	VG2379
TD6156-6	G0274617.D	1	07/14/17	ZQ	n/a	n/a	VG2379

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2, TD6115-3

CAS No.	Surrogate Recoveries	MS	MSD	TD6156-6	Limits
17060-07-0	1,2-Dichloroethane-D4	95%	95%	94%	68-124%
2037-26-5	Toluene-D8	102%	102%	102%	80-119%
460-00-4	4-Bromofluorobenzene	99%	99%	98%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: HALDAZP Haley & Aldrich - Phoenix, AZ
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD6115-1MS	G0274686.D	5	07/17/17	ZQ	n/a	n/a	VG2383
TD6115-1MSD	G0274687.D	5	07/17/17	ZQ	n/a	n/a	VG2383
TD6115-1 [a]	G0274684.D	5	07/17/17	ZQ	n/a	n/a	VG2383

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD6115-1, TD6115-2

CAS No.	Compound	TD6115-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
75-35-4	1,1-Dichloroethylene	36.5		125	172	108	125	173	109	1	67-140/18
79-01-6	Trichloroethylene	238		125	360	98	125	363	100	1	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD6115-1	Limits
1868-53-7	Dibromofluoromethane	100%	100%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	96%	96%	98%	68-124%
2037-26-5	Toluene-D8	103%	102%	102%	80-119%
460-00-4	4-Bromofluorobenzene	99%	98%	98%	72-126%

(a) AZ:D2

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Southeast)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD6115

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City / State / Zip: Houston TX 77036
Project Contact / E-mail: anita.patel@sgs.com
Phone # / Fax #: 713-271-4700
Sampler(s) Name(s) / Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City / State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet): V8260SIMDIOX

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	ISCO-1-D-98-071117		7/11/17	7:05:00 AM		AQ										X	
2	ISCO-1-S-85-071117		7/11/17	8:15:00 AM		AQ										X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 7/19/2017

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	7/12/17 1800	1 FED EX	2 FED EX		2 07/13/17 930
3		3	4		4
5		5			

Custody Seal # ☐ Intact ☐ Not intact | Preserved where applicable ☐ | On Ice ☐ | Cooler Temp. 3.0

7.1

7

TD6115: Chain of Custody
Page 1 of 2
SGS Accutest Southeast

SGS Accutest Sample Receipt Summary

Job Number: TD6115 **Client:** ALGC-TX **Project:** PLYMOUTH TUBE

Date / Time Received: 7/13/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 5642 4620 9623

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (2.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

Cooler Information	Y	N
1. Custody Seals Present	☑	☐
2. Custody Seals Intact	☑	☐
3. Temp criteria achieved	☑	☐
4. Cooler temp verification	IR Gun	
5. Cooler media	Ice (Bag)	

Trip Blank Information	Y	N	N/A
1. Trip Blank present / cooler	☐	☑	☐
2. Trip Blank listed on COC	☐	☑	☐
	W	**S**	**N/A**
3. Type Of TB Received	☐	☐	☑

Sample Information	Y	N	N/A
1. Sample labels present on bottles	☑	☐	
2. Samples preserved properly	☑	☐	
3. Sufficient volume/containers recvd for analysis:	☑	☐	
4. Condition of sample	Intact		
5. Sample recvd within HT	☑	☐	
6. Dates/Times/IDs on COC match Sample Label	☑	☐	
7. VOCs have headspace	☐	☑	☐
8. Bottles received for unspecified tests	☐	☑	
9. Compositing instructions clear	☐	☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐	☐	☑
11. % Solids Jar received?	☐	☐	☑
12. Residual Chlorine Present?	☐	☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 7/13/2017 9:30:00 AM Reviewer: P.H Date: 7/13/2017

7.1

7

TD6115: Chain of Custody
Page 2 of 2

GC/MS Volatiles

QC Data Summaries

(SGS Accutest Southeast)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD6115
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1772-MB	Z47019.D	1	07/14/17	DP	n/a	n/a	VZ1772

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD6115-1, TD6115-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	107%	74-125%
2037-26-5	Toluene-D8	101%	88-111%

Blank Spike Summary

Job Number: TD6115
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1772-BS	Z47017.D	1	07/14/17	DP	n/a	n/a	VZ1772

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD6115-1, TD6115-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.6	93	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	105%	74-125%
2037-26-5	Toluene-D8	106%	88-111%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD6115
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA45756-1MS	Z47035.D	1	07/14/17	DP	n/a	n/a	VZ1772
FA45756-1MSD	Z47036.D	1	07/14/17	DP	n/a	n/a	VZ1772
FA45756-1 [a]	Z47024.D	1	07/14/17	DP	n/a	n/a	VZ1772

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD6115-1, TD6115-2

CAS No.	Compound	FA45756-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	19.5	98	20	21.4	107	9	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA45756-1	Limits
17060-07-0	1,2-Dichloroethane-D4	108%	110%	110%	74-125%
2037-26-5	Toluene-D8	103%	103%	107%	88-111%

(a) Sample was not preserved to a pH < 2.

8.3.1

8

* = Outside of Control Limits.

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e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - Chandler, AZ

128159.002

SGS Accutest Job Number: TD10880

Sampling Date: 10/17/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: 78

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **9**
Section 4: Sample Results **10**
4.1: TD10880-1: PT-3-90-10172017 11
4.2: TD10880-2: PT-3-90-10172017 DUP 18
4.3: TD10880-3: PT-2S-90-10172017 21
4.4: TD10880-4: ERB-101717 28
4.5: TD10880-5: TRIP BLANK 31
Section 5: Misc. Forms **34**
5.1: Arizona Qualifiers 35
5.2: Chain of Custody 36
Section 6: MS Volatiles - QC Data Summaries **41**
6.1: Method Blank Summary 42
6.2: Blank Spike Summary 46
6.3: Blank Spike/Blank Spike Duplicate Summary 47
6.4: Matrix Spike/Matrix Spike Duplicate Summary 50
Section 7: GC Volatiles - QC Data Summaries **51**
7.1: Method Blank Summary 52
7.2: Blank Spike Summary 53
7.3: Matrix Spike Summary 54
7.4: Duplicate Summary 55
Section 8: General Chemistry - QC Data Summaries **56**
8.1: Method Blank and Spike Results Summary 57
8.2: Duplicate Results Summary 58
8.3: Matrix Spike Results Summary 59
Section 9: Misc. Forms (SGS Accutest Southeast) **60**
9.1: Chain of Custody 61
Section 10: MS Volatiles - QC Data (SGS Accutest Southeast) **63**
10.1: Method Blank Summary 64
10.2: Blank Spike Summary 66
10.3: Matrix Spike/Matrix Spike Duplicate Summary 68
Section 11: Misc. Forms (SGS Accutest Lafayette) **70**
11.1: Chain of Custody 71
Section 12: Metals Analysis - QC Data (SGS Accutest Lafayette) **73**
12.1: Prep QC MP9515: Fe,Na 74

SGS Accutest

Sample Summary

Haley & Aldrich

Job No: TD10880

Plymouth Tube Groundwater Monitoring - Chandler, AZ
Project No: 128159.002

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD10880-1	10/17/17	09:30		10/18/17	AQ	Ground Water	PT-3-90-10172017
TD10880-2	10/17/17	09:40		10/18/17	AQ	Ground Water	PT-3-90-10172017 DUP
TD10880-3	10/17/17	11:10		10/18/17	AQ	Ground Water	PT-2S-90-10172017
TD10880-4	10/17/17	10:15		10/18/17	AQ	Ground Water	ERB-101717
TD10880-5	10/17/17	00:00		10/18/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD10880
Site:	Plymouth Tube Groundwater Monitoring - Chandler, AZ	**Report Date**	10/26/2017 5:23:23 P

4 Sample(s) collected on 10/17/2017 and received intact at Accutest on 10/18/2017 and properly preserved in 1 cooler at 1.4 Deg C. The samples received an Accutest job number of TD10880. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1835

- All data for batch F:MS38619 was analyzed at SGS Accutest, Fl.

Matrix: AQ **Batch ID:** F:VZ1836

- All data for batch F:MS38619 was analyzed at SGS Accutest, Fl.

MS Volatiles By Method SW846 8260C

Matrix: AQ	Batch ID: VZ5455

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- VZ5455-BSD: Insufficient sample available for MS/MSD. AZ:Q9
- TD10880-5 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for Tetrachloroethylene: AZ:E4
- TD10880-5 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-5 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-1 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-1 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-1 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for Chloroform: AZ:E4
- TD10880-3 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-4 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-4 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-4 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-2 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-2 for Methyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-2 for Vinyl chloride: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD10880-3 for 1,1-Dichloroethane: AZ:E4
- TD10880-3 for 2,2-Dichloropropane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

Matrix: AQ	Batch ID: VZ5456

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD10880-3MS, TD10880-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- TD10880-3 for Trichloroethylene: AZ:D2

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ	Batch ID: GSS811

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD10587-5MS, TD10625-4DUP were used as the QC samples indicated.

Metals Analysis By Method SW846 6010C

Matrix: AQ	Batch ID: L:MP9515

- All data for batch L:MP9515 was analyzed at SGS Accutest, La.

General Chemistry By Method EPA 300

Matrix: AQ	Batch ID: GP44708

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD10799-1DUP, TD10799-1MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 2320B-2011

Matrix: AQ	Batch ID: GN85356

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) LA38089-5DUP, LA38089-5MS were used as the QC samples for Alkalinity, Total as CaCO3.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ	Batch ID: GN85487

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD10880-1DUP, TD10880-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD10880-1, TD10880-3 Sample received and analyzed out of holding time. Analysis performed as per client request.

General Chemistry By Method SM 4500 CO2 D

Matrix: AQ	Batch ID: GN85399

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) LA38130-1DUP were used as the QC samples for Alkalinity, Bicarbonate.

General Chemistry By Method SM18 2320B

Matrix: AQ	Batch ID: GN85400

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) LA38130-1DUP were used as the QC samples for Alkalinity, Carbonate.

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job No**	TD10880
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, A	**Report Date**	10/25/2017 2:09:46 P

2 samples, 0 trip blanks and 0 field blanks were collected on 10/17/2017 and were received intact at Accutest on 10/18/2017, properly preserved and cool at 2.5 Deg C. These Samples received an Accutest job number of TD10880. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP9515

- Sample(s) TD10880-1MS, TD10880-1MSD, TD10880-1SDL were used as the QC samples for metals.
- Matrix Spike/ Duplicate Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS Accutest Gulf Coast **Job No:** TD10880

Site: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ **Report Date:** 10/26/2017 12:41:28

2 Sample(s) were collected on 10/17/2017 and were received at SGS Accutest Southeast (SASE) on 10/20/2017 properly preserved, at 3.2 Deg. C and intact. These Samples received an SASE job number of TD10880. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1835

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA48606-4MS, FA48606-4MSD were used as the QC samples indicated.

Matrix: AQ **Batch ID:** VZ1836

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA48606-8MS, FA48606-8MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Kim Benham, Client Services (signature on file)

Summary of Hits

Job Number: TD10880
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Collected: 10/17/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD10880-1	**PT-3-90-10172017**					
1,4-Dioxane [a]		11.0	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		20.8	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		169	1.0	0.30	ug/l	SW846 8260C
Iron [b]		155	100		ug/l	SW846 6010C
Sodium [b]		476000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		1250	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		325	5.0		mg/l	SM 2320B-2011
Chloride		656	25		mg/l	EPA 300
Sulfate		367	30		mg/l	EPA 300
TD10880-2	**PT-3-90-10172017 DUP**					
1,1-Dichloroethylene		20.7	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		165	1.0	0.30	ug/l	SW846 8260C
TD10880-3	**PT-2S-90-10172017**					
1,4-Dioxane [a]		41.0	1.0	0.30	ug/l	SW846 8260B BY SIM
Chloroform [c]		0.43 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [c]		0.63 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene		104	1.0	0.30	ug/l	SW846 8260C
Tetrachloroethylene [c]		0.53 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [d]		585	10	3.0	ug/l	SW846 8260C
Sodium [b]		465000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		1110	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		310	5.0		mg/l	SM 2320B-2011
Chloride		712	25		mg/l	EPA 300
Sulfate		390	30		mg/l	EPA 300

TD10880-4 **ERB-101717**

No hits reported in this sample.

TD10880-5 **TRIP BLANK**

No hits reported in this sample.

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(c) AZ:E4
(d) AZ:D2

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59717.D	1	10/21/17 04:09	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	20.8	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	169	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	99%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z48900.D	1	10/24/17 16:50	AFL	n/a	n/a	F:VZ1835
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	11.0	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		74-125%
2037-26-5	Toluene-D8	106%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018460.D	1	10/20/17 09:19	LT	n/a	n/a	GSS811
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	155	100	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	476000	500	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9545
(2) Prep QC Batch: L:MP9515

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-10172017		
Lab Sample ID:	TD10880-1	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	1250	5.0	mg/l	1	10/20/17 14:20	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	10/20/17 14:20	PA	SM18 2320B
Alkalinity, Total as CaCO3	325	5.0	mg/l	1	10/19/17 15:40	PA	SM 2320B-2011
Chloride	656	25	mg/l	50	10/23/17 17:01	SM	EPA 300
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	10/25/17 12:15	PA	SM 3500FE B-2011
Sulfate	367	30	mg/l	50	10/23/17 17:01	SM	EPA 300

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-10172017 DUP		
Lab Sample ID:	TD10880-2	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59720.D	1	10/21/17 05:22	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	20.7	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017 DUP		
Lab Sample ID:	TD10880-2	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	165	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	98%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-10172017 DUP		
Lab Sample ID:	TD10880-2	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59718.D	1	10/21/17 04:34	ZQ	n/a	n/a	VZ5455
Run #2	Z59739.D	10	10/23/17 11:38	ZQ	n/a	n/a	VZ5456

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.43	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.63	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	104	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [b]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene [a]	0.53	1.0	0.30	ug/l	J
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene [c]	585 [d]	10	3.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [b]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	109%	68-124%
2037-26-5	Toluene-D8	98%	97%	80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%	101%	72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
(c) AZ:D2
(d) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z48918.D	1	10/25/17 13:55	AFL	n/a	n/a	F:VZ1836
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	41.0	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	96%		74-125%
2037-26-5	Toluene-D8	108%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018461.D	1	10/20/17 09:34	LT	n/a	n/a	GSS811
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	465000	500	ug/l	1	10/20/17	10/20/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9545
(2) Prep QC Batch: L:MP9515

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-10172017		
Lab Sample ID:	TD10880-3	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	1110	5.0	mg/l	1	10/20/17 14:20	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	10/20/17 14:20	PA	SM18 2320B
Alkalinity, Total as CaCO3	310	5.0	mg/l	1	10/19/17 15:40	PA	SM 2320B-2011
Chloride	712	25	mg/l	50	10/23/17 17:18	SM	EPA 300
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	10/25/17 12:15	PA	SM 3500FE B-2011
Sulfate	390	30	mg/l	50	10/23/17 17:18	SM	EPA 300

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ERB-101717		
Lab Sample ID:	TD10880-4	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59719.D	1	10/21/17 04:58	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-101717		
Lab Sample ID:	TD10880-4	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	97%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-101717		
Lab Sample ID:	TD10880-4	**Date Sampled:**	10/17/17
Matrix:	AQ - Ground Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD10880-5	**Date Sampled:**	10/17/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59716.D	1	10/21/17 03:45	ZQ	n/a	n/a	VZ5455
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane [a]	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD10880-5	**Date Sampled:**	10/17/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride [a]	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	95%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD10880-5	**Date Sampled:**	10/17/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/18/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - Chandler, AZ		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
V9	CCV recovery was below method acceptance limits.

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

pg 1 of 1

FED-EX Tracking # 7705 2244 7643
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: TD10880

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E. Van Buren
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: Lance S Hensel

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-002
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B - VOC	8260B SIM - 1,4-Dioxane	EPA 300 - Sulfate	SW 846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron	RSK 175 - Methane, ethane, ethene	2320B - Alkalinity	EPA 300 - Chloride	6010/6020 - Sodium			LAB USE ONLY
1	PT-3-90-10172017	10-17-17	0930	LP/SH	GW	14	8		3		3				X	X	X	X	X	X	X	X	X			
2	PT-3-90-10172017 DUP		0940			3	3								X											
3	PT-25-90-10172017		1110			14	8		3		3				X	X	X	X	X	X	X	X	X			
4	ERB-101717		1015			3	3								X											
5	Trip Blank					2	2								X											

Matrix Codes
WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
Ol-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

Turnaround Time (Business days)
- 10 Day
- 5 Day
- 3 Day
- 2 Day
- 1 Day
- Same Day

Approved By:/ Date:

Emergency T/A data available VIA Lablink

Data Deliverable Information
- Commercial "A" - Results only
- Commercial "B" - Results with QC summaries
- Commerical "B+" - Results, QC, and chromatograms
- FULT1 - Level 4 data package
- EDF for Geotracker — EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		10/17/17 11:30	1 Ashley Grum	2 Ashley Grum	10/17/17 1600	2 Fed Ex
3	FEDEX	10/18/17 1015	3 [illegible]	4		4
5			5			

Custody Seal #
Appropriate Bottle / Pres (Y) / N
Headspace Y / (N)
On Ice (Y) / N
Labels match Coc (Y) / N
Separate Receiving Check List used: (Y) N
Cooler Temp. 1.4 oC

5.2 5

TD10880: Chain of Custody
Page 1 of 5

SGS ACCUTEST

COOLER TEMP FORM

~~TC#~~ TD10880

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 10/18/17

Client: HALEY & ALDRICH

Cooler Number: 1

Thermometer ID: TRE CF, °C 0.0 Corrected Temp, °C 1.4

1 & 3

3-250ml HNO3

3-250ml NP

6-40ml HCL

2-40ml HCL

2 & 4

3-40ml HCL

5 - FB

ACCUTEST

Date 10/17/17

ORIGIN ID:MSCA (480) 275-8931
ASHLEY LOCUM
ACCUTEST TEMPE SERVICE CENTER
1741 W. UNIVERSITY DR.
SUITE 149
TEMPE, AZ 85281
UNITED STATES US

TO SAMPLE RECEIVING
ACCUTEST LABORATORIES
10165 HARWIN DR.
SUITE 150
HOUSTON TX 77071
(713) 271-4700 REF: CLEARCREEK/HALEYALDRICH
INV:
PO: DEPT:

549J4/94F

FedEx Express

E

WED - 18 OCT 10:30A
PRIORITY OVERNIGHT
DSR
77071
TX-US iAH

TRK# 0201 7705 2244 7643

AB SGRA

TD10880: Chain of Custody
Page 2 of 5

SGS Accutest Sample Receipt Summary

Job Number: TD10880 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: **Delivery Method:** **Airbill #'s:** 770522447643

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (1.4/1.4);

Cooler Security	Y	N		Y	N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑	☐	☐	☑	☐
2. Trip Blank listed on COC:	☑	☐	☐		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Sample Receipt Log

Job #: TD10880 **Date / Time Received:** 10/18/2017 10:15:00 AM **Initials:** RE

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD10880-1	250ml	1	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	250ml	2	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	250ml	3	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	250ml	4	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-1	250ml	5	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-1	250ml	6	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	7	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	40ml	8	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	12	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	13	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-1	40ml	14	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	250ml	1	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	250ml	2	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	250ml	3	SUB	HNO3	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	250ml	4	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-3	250ml	5	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4
1	TD10880-3	250ml	6	3E	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4

Sample Receipt Log

Job #: TD10880 **Date / Time Received:** 10/18/2017 10:15:00 AM **Initials:** RE

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD10880-3	40ml	7	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	40ml	8	1GG	HCL	pH < 2	IR-5	1.4	0	1.4
1	TD10880-3	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	12	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	13	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-3	40ml	14	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10880-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-MB	Z59715.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-MB	Z59715.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	104%	68-124%

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-MB	Z59715.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	105%	72-126%

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5456-MB	Z59738.D	1	10/23/17	ZQ	n/a	n/a	VZ5456

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-3

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	105%	68-124%
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	100%	72-126%

Blank Spike Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5456-BS	Z59736.D	1	10/23/17	ZQ	n/a	n/a	VZ5456

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
79-01-6	Trichloroethylene	25	19.1	76	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	98%	68-124%
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-BS	Z59711.D	1	10/21/17	ZQ	n/a	n/a	VZ5455
VZ5455-BSD [a]	Z59712.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	125	106	85	106	85	0	46-129/30
71-43-2	Benzene	25	21.6	86	22.1	88	2	68-119/30
108-86-1	Bromobenzene	25	23.2	93	22.5	90	3	71-119/30
74-97-5	Bromochloromethane	25	21.0	84	21.1	84	0	71-118/30
75-27-4	Bromodichloromethane	25	22.3	89	22.1	88	1	72-118/30
75-25-2	Bromoform	25	21.6	86	21.8	87	1	54-123/30
104-51-8	n-Butylbenzene	25	23.4	94	23.2	93	1	66-123/30
135-98-8	sec-Butylbenzene	25	24.9	100	25.2	101	1	72-123/30
98-06-6	tert-Butylbenzene	25	24.6	98	24.1	96	2	70-124/30
108-90-7	Chlorobenzene	25	22.4	90	22.7	91	1	74-120/30
75-00-3	Chloroethane	25	23.8	95	23.8	95	0	61-132/30
67-66-3	Chloroform	25	20.5	82	20.9	84	2	73-122/30
95-49-8	o-Chlorotoluene	25	23.3	93	23.3	93	0	71-122/30
106-43-4	p-Chlorotoluene	25	23.7	95	23.5	94	1	73-120/30
75-15-0	Carbon disulfide	25	21.9	88	21.7	87	1	55-140/30
56-23-5	Carbon tetrachloride	25	23.4	94	23.5	94	0	68-133/30
75-34-3	1,1-Dichloroethane	25	22.2	89	22.1	88	0	72-121/30
75-35-4	1,1-Dichloroethylene	25	22.7	91	22.1	88	3	67-140/30
563-58-6	1,1-Dichloropropene	25	21.1	84	20.8	83	1	73-130/30
96-12-8	1,2-Dibromo-3-chloropropane	25	23.3	93	22.8	91	2	47-133/30
106-93-4	1,2-Dibromoethane	25	23.3	93	24.0	96	3	69-121/30
107-06-2	1,2-Dichloroethane	25	23.4	94	22.1	88	6	68-121/30
78-87-5	1,2-Dichloropropane	25	22.0	88	22.7	91	3	72-116/30
142-28-9	1,3-Dichloropropane	25	21.7	87	22.5	90	4	70-118/30
594-20-7	2,2-Dichloropropane	25	19.9	80	20.0	80	1	57-141/30
124-48-1	Dibromochloromethane	25	23.1	92	23.0	92	0	68-119/30
75-71-8	Dichlorodifluoromethane	25	17.4	70	16.1	64	8	29-182/30
156-59-2	cis-1,2-Dichloroethylene	25	21.9	88	22.2	89	1	72-117/30
10061-01-5	cis-1,3-Dichloropropene	25	21.3	85	21.0	84	1	71-118/30
541-73-1	m-Dichlorobenzene	25	23.2	93	22.8	91	2	73-117/30
95-50-1	o-Dichlorobenzene	25	22.7	91	22.7	91	0	71-117/30
106-46-7	p-Dichlorobenzene	25	21.9	88	22.3	89	2	71-116/30
156-60-5	trans-1,2-Dichloroethylene	25	22.4	90	22.2	89	1	68-124/30
10061-02-6	trans-1,3-Dichloropropene	25	22.4	90	22.8	91	2	72-127/30
100-41-4	Ethylbenzene	25	23.4	94	23.7	95	1	71-117/30
637-92-3	Ethyl tert-Butyl Ether	25	20.8	83	21.2	85	2	66-122/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-BS	Z59711.D	1	10/21/17	ZQ	n/a	n/a	VZ5455
VZ5455-BSD [a]	Z59712.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	125	121	97	119	95	2	49-124/30
87-68-3	Hexachlorobutadiene	25	24.3	97	24.2	97	0	62-143/30
98-82-8	Isopropylbenzene	25	26.5	106	26.6	106	0	74-141/30
99-87-6	p-Isopropyltoluene	25	24.0	96	23.9	96	0	72-126/30
108-10-1	4-Methyl-2-pentanone	125	116	93	113	90	3	54-122/30
74-83-9	Methyl bromide	25	19.6	78	20.2	81	3	53-138/30
74-87-3	Methyl chloride	25	16.9	68	17.6	70	4	50-145/30
74-95-3	Methylene bromide	25	22.9	92	22.9	92	0	71-117/30
75-09-2	Methylene chloride	25	22.7	91	21.9	88	4	60-125/30
78-93-3	Methyl ethyl ketone	125	117	94	116	93	1	51-129/30
1634-04-4	Methyl Tert Butyl Ether	25	21.7	87	22.0	88	1	65-119/30
91-20-3	Naphthalene	25	27.6	110	27.3	109	1	43-139/30
103-65-1	n-Propylbenzene	25	23.7	95	23.3	93	2	72-123/30
100-42-5	Styrene	25	23.8	95	24.7	99	4	74-119/30
75-65-0	Tert Butyl Alcohol	250	231	92	223	89	4	35-146/30
630-20-6	1,1,1,2-Tetrachloroethane	25	24.5	98	24.0	96	2	74-119/30
71-55-6	1,1,1-Trichloroethane	25	22.8	91	22.9	92	0	72-129/30
79-34-5	1,1,2,2-Tetrachloroethane	25	22.9	92	22.6	90	1	62-121/30
79-00-5	1,1,2-Trichloroethane	25	21.7	87	22.6	90	4	70-119/30
87-61-6	1,2,3-Trichlorobenzene	25	25.1	100	25.1	100	0	44-144/30
96-18-4	1,2,3-Trichloropropane	25	23.6	94	22.4	90	5	61-124/30
120-82-1	1,2,4-Trichlorobenzene	25	24.6	98	24.3	97	1	57-132/30
95-63-6	1,2,4-Trimethylbenzene	25	23.4	94	23.5	94	0	70-121/30
108-67-8	1,3,5-Trimethylbenzene	25	24.6	98	24.6	98	0	66-119/30
127-18-4	Tetrachloroethylene	25	24.6	98	25.0	100	2	72-132/30
108-88-3	Toluene	25	22.4	90	22.7	91	1	73-119/30
79-01-6	Trichloroethylene	25	23.1	92	22.7	91	2	73-121/30
75-69-4	Trichlorofluoromethane	25	21.1	84	20.3	81	4	46-152/30
75-01-4	Vinyl chloride	25	16.8	67	16.9	68	1	54-126/30
1330-20-7	Xylene (total)	75	70.5	94	71.8	96	2	74-119/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	95%	97%	72-122%
17060-07-0	1,2-Dichloroethane-D4	97%	96%	68-124%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5455-BS	Z59711.D	1	10/21/17	ZQ	n/a	n/a	VZ5455
VZ5455-BSD [a]	Z59712.D	1	10/21/17	ZQ	n/a	n/a	VZ5455

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-1, TD10880-2, TD10880-3, TD10880-4, TD10880-5

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
2037-26-5	Toluene-D8	100%	100%	80-119%
460-00-4	4-Bromofluorobenzene	101%	100%	72-126%

(a) Insufficient sample available for MS/MSD. AZ:Q9

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10880-3MS	Z59740.D	10	10/23/17	ZQ	n/a	n/a	VZ5456
TD10880-3MSD	Z59741.D	10	10/23/17	ZQ	n/a	n/a	VZ5456
TD10880-3	Z59739.D	10	10/23/17	ZQ	n/a	n/a	VZ5456

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD10880-3

CAS No.	Compound	TD10880-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	585		250	837	101	250	789	82	6	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD10880-3	Limits
1868-53-7	Dibromofluoromethane	95%	95%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	100%	98%	109%	68-124%
2037-26-5	Toluene-D8	99%	97%	97%	80-119%
460-00-4	4-Bromofluorobenzene	100%	99%	101%	72-126%

* = Outside of Control Limits.

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS811-MB	SS018450.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS811-BS	SS018448.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	17.2	80	68-139
74-85-1	Ethene	57.4	45.3	79	52-145
74-84-0	Ethane	43.3	42.3	98	68-131

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10587-5MS	SS018456.D	1	10/20/17	LT	n/a	n/a	GSS811
TD10587-5	SS018455.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	TD10587-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	11.0		21.5	27.9	79	68-139
74-85-1	Ethene	ND		57.4	47.0	82	52-145
74-84-0	Ethane	ND		43.3	44.5	103	68-131

* = Outside of Control Limits.

Duplicate Summary

Job Number: TD10880
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10625-4DUP	SS018459.D	1	10/20/17	LT	n/a	n/a	GSS811
TD10625-4	SS018458.D	1	10/20/17	LT	n/a	n/a	GSS811

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD10880-1, TD10880-3

CAS No.	Compound	TD10625-4 ug/l	Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	ND		ND		nc	53
74-85-1	Ethene	ND		ND		nc	27
74-84-0	Ethane	ND		ND		nc	43

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD10880
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate	GN85399	5.0	1.0	mg/l				
Alkalinity, Carbonate	GN85400	5.0	0.0	mg/l				
Alkalinity, Total as CaCO3	GN85356	5.0	0.0	mg/l	100	93.0	93.0	90-100%
Chloride	GP44708/GN85454	0.50	0.0	mg/l	10	9.55	95.5	90-110%
Iron, Ferrous	GN85487	0.10	-0.0080	mg/l	4	4.0	101.0	94-103%
Sulfate	GP44708/GN85454	0.60	0.0	mg/l	10	9.79	97.9	90-110%

Associated Samples:
Batch GN85356: TD10880-1, TD10880-3
Batch GN85399: TD10880-1, TD10880-3
Batch GN85400: TD10880-1, TD10880-3
Batch GN85487: TD10880-1, TD10880-3
Batch GP44708: TD10880-1, TD10880-3
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD10880
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Bicarbonate	GN85399	LA38130-1	mg/l	470	470	0.0	0-10%
Alkalinity, Carbonate	GN85400	LA38130-1	mg/l	0.0	0.0	0.0	0-20%
Alkalinity, Total as CaCO3	GN85356	LA38089-5	mg/l	610	610	0.0	0-10%
Chloride	GP44708/GN85454	TD10799-1	mg/l	0.78	0.77	1.3	0-20%
Iron, Ferrous	GN85487	TD10880-1	mg/l	0.085	0.085	0.0	0-10%
Sulfate	GP44708/GN85454	TD10799-1	mg/l	0.0	0.0	0.0	0-20%

Associated Samples:
Batch GN85356: TD10880-1, TD10880-3
Batch GN85399: TD10880-1, TD10880-3
Batch GN85400: TD10880-1, TD10880-3
Batch GN85487: TD10880-1, TD10880-3
Batch GP44708: TD10880-1, TD10880-3
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD10880
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN85356	LA38089-5	mg/l	610	25	635	100.0	75-117%
Chloride	GP44708/GN85454	TD10799-1	mg/l	0.78	10	9.9	91.2	80-120%
Iron, Ferrous	GN85487	TD10880-1	mg/l	0.085	4	4.1	101.0	89-106%
Sulfate	GP44708/GN85454	TD10799-1	mg/l	0.0	10	9.7	97.0	80-120%

Associated Samples:
Batch GN85356: TD10880-1, TD10880-3
Batch GN85487: TD10880-1, TD10880-3
Batch GP44708: TD10880-1, TD10880-3
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Southeast)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD10880

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: Trameshia.Brown@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-10172017		10/17/17	9:30:00 AM		AQ	3	x								X	
3	PT-25-90-10172017		10/17/17	11:10:00 AM		AQ	3	x								X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 10/25/2017

Emergency & Rush TAT data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions: fL

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Tir	Received By:	Relinquished By:	Date Time:	Received By:
1	1010	1 No	2		2 10/20/17 900
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp. 3.2

91

9

TD10880: Chain of Custody
Page 1 of 2
SGS Accutest Southeast

SGS Accutest Sample Receipt Summary

Job Number: TD10880 **Client:** ALGC **Project:** PLYMOUTH TUBE

Date / Time Received: 10/20/2017 9:00:00 AM **Delivery Method:** FED EX **Airbill #'s:** 1001891712860003281100564246213589

Therm ID: IR 1; **Therm CF:** -0.2; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.2);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 10/20/2017 9:00:00 A Reviewer: BR Date: 10/20/2017

9.1

9

TD10880: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

(SGS Accutest Southeast)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1835-MB	Z48882.D	1	10/24/17	MM	n/a	n/a	VZ1835

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-1

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	103%	74-125%
2037-26-5	Toluene-D8	101%	88-111%

Method Blank Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1836-MB	Z48914.D	1	10/25/17	MM	n/a	n/a	VZ1836

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	101%	74-125%
2037-26-5	Toluene-D8	105%	88-111%

Blank Spike Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1835-BS	Z48880.D	1	10/24/17	MM	n/a	n/a	VZ1835

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	20.3	102	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	102%	74-125%
2037-26-5	Toluene-D8	102%	88-111%

10.2.1

10

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1836-BS	Z48912.D	1	10/25/17	MM	n/a	n/a	VZ1836

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	20.5	103	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	100%	74-125%
2037-26-5	Toluene-D8	105%	88-111%

10.2.2

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA48606-4MS	Z48904.D	1	10/24/17	MM	n/a	n/a	VZ1835
FA48606-4MSD	Z48905.D	1	10/24/17	MM	n/a	n/a	VZ1835
FA48606-4	Z48886.D	1	10/24/17	MM	n/a	n/a	VZ1835

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-1

CAS No.	Compound	FA48606-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	38.0		20	57.9	100	20	57.8	99	0	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA48606-4	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	96%	99%	74-125%
2037-26-5	Toluene-D8	105%	105%	102%	88-111%

10.3.1

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD10880
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA48606-8MS	Z48922.D	1	10/25/17	MM	n/a	n/a	VZ1836
FA48606-8MSD	Z48923.D	1	10/25/17	MM	n/a	n/a	VZ1836
FA48606-8	Z48915.D	1	10/25/17	MM	n/a	n/a	VZ1836

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD10880-3

CAS No.	Compound	FA48606-8 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	36.1		20	56.1	100	20	56.0	100	0	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA48606-8	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	98%	100%	74-125%
2037-26-5	Toluene-D8	107%	107%	107%	88-111%

10.3.2

10

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Lafayette)

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD10880

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: Trameshia.Brown@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE ,NA	LAB USE ONLY
1	PT-3-90-10172017		10/17/17	9:30:00 AM		AQ	3			x						X	3
3	PT-25-90-10172017		10/17/17	11:10:00 AM		AQ	3			x						X	3

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 10/25/2017

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

LA 3W2

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1 [signature]	10/19/17 1600	1 SGS	2 SGS		2 [signature]
3 [signature]	10/19/17 2352	3 [signature] 10-20-17 7:30 am	4		4
5		5	Custody Seal # CS 60	☑ Intact ☐ Not intact	Preserved where applicable ☑ On Ice ☑ Cooler Temp. 2.5 IN 439

11.1

11

TD10880: Chain of Custody
Page 1 of 2
SGS Accutest Lafayette

SGS Accutest Sample Receipt Summary

Job Number: TD10880 **Client:** SGS (TX) **Project:** PLYMOUTH TUBE GROUNDWATER

Date / Time Received: 10/20/2017 7:30:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2.5/2.5); DV439

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV439;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

11.1

11

TD10880: Chain of Custody

Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Accutest Lafayette)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/20/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	14	46		
Antimony	6.0	1.4	3.7		
Arsenic	10	1.9	2.6		
Barium	10	.21	1.3		
Beryllium	4.0	.05	.3		
Boron	100	.95	10		
Cadmium	5.0	.13	.9		
Calcium	100	5.1	58		
Chromium	10	.29	.9		
Cobalt	10	.15	.8		
Copper	10	.43	4		
Iron	100	2.8	33	2.0	<100
Lead	10	.9	1.8		
Lithium	10	1.1	6.3		
Magnesium	100	18	37		
Manganese	10	.05	1.1		
Molybdenum	10	.15	1.1		
Nickel	10	.3	1		
Potassium	500	25	50		
Selenium	10	1.7	3.6		
Silver	10	.32	1.4		
Sodium	500	6.5	53	6.9	<500
Strontium	10	.09	1		
Thallium	5.0	1.3	1.6		
Tin	10	.76	.9		
Titanium	10	.46	1.7		
Vanadium	10	.33	.9		
Zinc	20	.63	4.3		

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/20/17

Metal	TD10880-1 Original	MS	Spikelot ICPSPIKE	1% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	155	1240	1000	108.5	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	anr				
Potassium					
Selenium	anr				
Silver	anr				
Sodium	476000	498000	10000	220.0(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc	anr				

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 10/20/17

Metal	TD10880-1 Original	MSD	Spikelot ICPSPIKE	1% Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	155	1220	1000	106.5	1.6	20
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium	476000	492000	10000	160.0(a)	1.2	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/20/17

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	1020	1000	102.0	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	10300	10000	103.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD10880
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9515
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 10/20/17

Metal	TD10880-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	155	149	3.6	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	476000	456000	4.3	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9515: TD10880-1, TD10880-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-003

128159-003

SGS Accutest Job Number: TD12337

Sampling Date: 11/15/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: 37

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **7**
Section 4: Sample Results **8**
4.1: TD12337-1: PT-3-90-11152017 9
4.2: TD12337-2: PT-2S-90-11152017 12
Section 5: Misc. Forms **15**
5.1: Chain of Custody 16
Section 6: GC Volatiles - QC Data Summaries **20**
6.1: Method Blank Summary 21
6.2: Blank Spike Summary 22
6.3: Matrix Spike Summary 23
6.4: Duplicate Summary 24
Section 7: General Chemistry - QC Data Summaries **25**
7.1: Method Blank and Spike Results Summary 26
7.2: Duplicate Results Summary 27
7.3: Matrix Spike Results Summary 28
Section 8: Misc. Forms (SGS Accutest Lafayette) **29**
8.1: Chain of Custody 30
Section 9: Metals Analysis - QC Data (SGS Accutest Lafayette) **32**
9.1: Prep QC MP9843: Fe,Na 33

SGS Accutest

Sample Summary

Haley & Aldrich

Job No: TD12337

Plymouth Tube Groundwater Monitoring - 128159-003
Project No: 128159-003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD12337-1	11/15/17	09:00		11/16/17	AQ	Ground Water	PT-3-90-11152017
TD12337-2	11/15/17	11:15		11/16/17	AQ	Ground Water	PT-2S-90-11152017

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD12337
Site:	Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	11/28/2017 3:35:31 P

2 Sample(s) collected on 11/15/2017 and received intact at Accutest on 11/16/2017 and properly preserved in 1 cooler at 2.8 Deg C. The samples received an Accutest job number of TD12337. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ **Batch ID:** GSS819

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD12337-1DUP, TD12342-1MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals Analysis By Method SW846 6010C

Matrix: AQ **Batch ID:** L:MP9843

- All data for batch L:MP9843 was analyzed at SGS Accutest, La.

General Chemistry By Method EPA 300.0

Matrix: AQ **Batch ID:** GP45126

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12337-2DUP, TD12337-2MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 2320B-2011

Matrix: AQ **Batch ID:** GN86014

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12337-2DUP, TD12337-2MS were used as the QC samples for Alkalinity, Total as CaCO3.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ **Batch ID:** GN86012

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12337-1DUP, TD12337-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD12337-1, TD12337-2 Sample received and analyzed out of holding time. Analysis performed as per client request.

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job No**	TD12337
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, A	**Report Date**	11/22/2017 3:34:34 P

2 samples, 0 trip blanks and 0 field blanks were collected on 11/15/2017 and were received intact at Accutest on 11/16/2017, properly preserved and cool at 1.6 Deg C. These Samples received an Accutest job number of TD12337. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP9843

- Sample(s) TD11718-2MS, TD11718-2MSD, TD11718-2SDL were used as the QC samples for metals.
- Matrix Spike/ Duplicate Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Summary of Hits

Job Number: TD12337
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 11/15/17

3

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD12337-1	**PT-3-90-11152017**					
Iron [a]		183	100		ug/l	SW846 6010C
Sodium [a]		431000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		339	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		340	5.0		mg/l	SM 2320B-2011
Chloride		538	50		mg/l	EPA 300.0
Sulfate		313	60		mg/l	EPA 300.0
TD12337-2	**PT-2S-90-11152017**					
Sodium [a]		454000	500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		64.9	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		65.0	5.0		mg/l	SM 2320B-2011
Chloride		597	50		mg/l	EPA 300.0
Sulfate		349	60		mg/l	EPA 300.0

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12337-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018634.D	1	11/17/17 09:58	LT	n/a	n/a	GSS819
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	21 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12337-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	183	100	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	431000	500	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9899
(2) Prep QC Batch: L:MP9843

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12337-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	339	5.0	mg/l	1	11/16/17 16:50	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	11/16/17 16:50	PA	SM18 2320B
Alkalinity, Total as CaCO3	340	5.0	mg/l	1	11/16/17 16:50	PA	SM 2320B-2011
Chloride	538	50	mg/l	100	11/20/17 14:47	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	11/16/17 16:00	PA	SM 3500FE B-2011
Sulfate	313	60	mg/l	100	11/20/17 14:47	ES	EPA 300.0

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12337-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018636.D	1	11/17/17 10:32	LT	n/a	n/a	GSS819
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	21 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12337-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	454000	500	ug/l	1	11/17/17	11/17/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA9899
(2) Prep QC Batch: L:MP9843

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12337-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	64.9	5.0	mg/l	1	11/16/17 16:50	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	11/16/17 16:50	PA	SM18 2320B
Alkalinity, Total as CaCO3	65.0	5.0	mg/l	1	11/16/17 16:50	PA	SM 2320B-2011
Chloride	597	50	mg/l	100	11/20/17 15:03	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	11/16/17 16:00	PA	SM 3500FE B-2011
Sulfate	349	60	mg/l	100	11/20/17 15:03	ES	EPA 300.0

(a) Sample received and analyzed out of holding time. Analysis performed as per client request.

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SGS

PHOENIX CHAIN OF CUSTODY

ACCUTEST

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

pg 1 of 1

FED-EX Tracking # 7707 6031 2333
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: C TD 12337

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E Van Buren St
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / C Nemanic

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-003
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	EPA300 - Sulfate	SW846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron 45 Am	RSK 175 - Methane filtered ethane, ethene	2320B - Alkalinity	EPA300 - Chloride	6010/6020 - Sodium					LAB USE ONLY
1	PT-3-90-11152017	11-15-17	0900	CP/CN	GW	8	2		3		3				X	X	X	X	X	X	X					
2	PT-25-90-11152017	↓	1115	↓	↓	8	2		3		3				X	X	X	X	X	X	X					

Matrix Codes

WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
OI-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

PAGGED BY: [signature]

VERIFIED BY: [signature]

Turnaround Time (Business days)

Approved By:/ Date:

- [ ] 10 Day
- [x] 5 Day Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature]	11/15/17 13:40	1 Ashley Tocum	2 Ashley Tocum	11/15/17 1600	2 Fed Ex
Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3 Fed Ex	11/16/17 0945	3 [signature] 11/16/17 0945	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Appropriate Bottle / Pres. Y / N	Headspace Y / N On Ice Y / N
5		5		Labels match Coc? Y / N	Separate Receiving Check List used Y / N

Cooler Temp. 2.8 oC

5.1

5

TD12337: Chain of Custody
Page 1 of 4

ACCUTEST

COOLER TEMP FORM

~~TC#~~ TD12337

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 11-16-17

Client: HALEY ADRIAN

Cooler Number: 1

Thermometer ID: 029 CF, °C 0 Corrected Temp, °C 2.8

SAMPLES CONTAINED IN COOLER

Fed # 770760312333

3- 250ml NP

3- 250ml HNO3

2- 40ml HCl

ADING INSPECTION.
IPANY.

Form: SM027-06 Rev 10/24/2016

5.1 5

TD12337: Chain of Custody

Page 2 of 4

SGS Accutest Sample Receipt Summary

Job Number: TD12337 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUB

Date / Time Received: 11/16/2017 9:45:00 AM **Delivery Method:** **Airbill #'s:** 770760312333

No. Coolers: 1 **Therm ID:** IR9; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2.8/2.8);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☐	☑	☐	☐
2. Trip Blank listed on COC:	☐	☐	☑		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

5.1

5

TD12337: Chain of Custody

Page 3 of 4

Sample Receipt Log

Job #: TD12337 **Date / Time Received:** 11/16/2017 9:45:00 AM 9:45: **Initials:** RE

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD12337-1	250ml	1	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-1	250ml	2	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-1	250ml	3	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-1	250ml	4	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	250ml	5	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	250ml	6	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	40ml	7	1C	HCL	pH < 2	IR9	2.8	0	2.8
1	TD12337-1	40ml	8	1C	HCL	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	250ml	1	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-2	250ml	2	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-2	250ml	3	3N	N/P	Note #2 - Preservative check not applicable.	IR9	2.8	0	2.8
1	TD12337-2	250ml	4	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	250ml	5	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	250ml	6	SUB	HNO3	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	40ml	7	1C	HCL	pH < 2	IR9	2.8	0	2.8
1	TD12337-2	40ml	8	1C	HCL	pH < 2	IR9	2.8	0	2.8

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS819-MB	SS018629.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1, TD12337-2

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS819-BS	SS018627.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1, TD12337-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
74-82-8	Methane	21.5	21.4	100	68-139
74-85-1	Ethene	57.4	56.7	99	52-145
74-84-0	Ethane	43.3	52.0	120	68-131

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD12342-1MS	SS018640.D	1	11/17/17	LT	n/a	n/a	GSS819
TD12342-1	SS018639.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1, TD12337-2

CAS No.	Compound	TD12342-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Limits
74-82-8	Methane	ND		21.5	16.9	79	68-139
74-85-1	Ethene	ND		57.4	43.4	76	52-145
74-84-0	Ethane	ND		43.3	40.2	93	68-131

* = Outside of Control Limits.

Duplicate Summary

Job Number: TD12337
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD12337-1DUP	SS018635.D	1	11/17/17	LT	n/a	n/a	GSS819
TD12337-1	SS018634.D	1	11/17/17	LT	n/a	n/a	GSS819

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD12337-1

CAS No.	Compound	TD12337-1 ug/l	Q	DUP ug/l	Q	RPD	Limits
74-82-8	Methane	ND		ND		nc	53
74-85-1	Ethene	ND		ND		nc	27
74-84-0	Ethane	ND		ND		nc	43

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD12337
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Total as CaCO3	GN86014	5.0	0.0	mg/l	100	92.0	92.0	90-100%
Chloride	GP45126/GN86083	0.50	0.0	mg/l	10	9.72	97.2	90-110%
Iron, Ferrous	GN86012	0.10	0.0	mg/l	4	4.0	100.0	94-103%
Sulfate	GP45126/GN86083	0.60	0.0	mg/l	10	9.63	96.3	90-110%

Associated Samples:
Batch GN86012: TD12337-1, TD12337-2
Batch GN86014: TD12337-1, TD12337-2
Batch GP45126: TD12337-1, TD12337-2
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD12337
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN86014	TD12337-2	mg/l	65.0	65.0	0.0	0-10%
Chloride	GP45126/GN86083	TD12337-2	mg/l	597	647	8.0	0-20%
Iron, Ferrous	GN86012	TD12337-1	mg/l	0.0	0.0	0.0	0-10%
Sulfate	GP45126/GN86083	TD12337-2	mg/l	349	342	2.0	0-20%

Associated Samples:
Batch GN86012: TD12337-1, TD12337-2
Batch GN86014: TD12337-1, TD12337-2
Batch GP45126: TD12337-1, TD12337-2
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD12337
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN86014	TD12337-2	mg/l	65.0	25	87.0	88.0	75-117%
Chloride	GP45126/GN86083	TD12337-2	mg/l	597	1000	1530	93.3	80-120%
Iron, Ferrous	GN86012	TD12337-1	mg/l	0.0	4	4.0	100.0	89-106%
Sulfate	GP45126/GN86083	TD12337-2	mg/l	349	1000	1240	89.1	80-120%

Associated Samples:
Batch GN86012: TD12337-1, TD12337-2
Batch GN86014: TD12337-1, TD12337-2
Batch GP45126: TD12337-1, TD12337-2
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Lafayette)

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD12337

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE ,NA ,	LAB USE ONLY
1	PT-3-90-11152017		11/15/17	9:00:00 AM		AQ	1			X						X	
2	PT-25-90-11152017		11/15/17	11:15:00 AM		AQ	1			X						X	

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 11/23/2017

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

LA

(BW2)

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 S. James	11-16-17 1800	1 SGS	2		2 [signature]
3 [signature]	11-16-17 2300	3 [signature] 11-17-17 0750	4		4
5		5	Custody Seal # CS ON COOL ☑ Intact ☐ Not intact	Preserved where applicable ☑	On Ice ☑ Cooler Temp. (1.6 on 4.1)

8.1

8

TD12337: Chain of Custody
Page 1 of 2
SGS Accutest Lafayette

SGS Accutest Sample Receipt Summary

Job Number: TD12337 **Client:** SGS (TX) **Project:** PLYMOUTH TUBE GW

Date / Time Received: 11/17/2017 7:50:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.6/1.6); DV441

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV441;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

8.1

8

TD12337: Chain of Custody

Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Accutest Lafayette)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	10	46		
Antimony	6.0	1.5	3.7		
Arsenic	10	1.5	2.6		
Barium	10	.25	1.3		
Beryllium	4.0	.04	.3		
Boron	100	1.4	10		
Cadmium	5.0	.13	.9		
Calcium	100	5.9	58		
Chromium	10	.35	.9		
Cobalt	10	.15	.8		
Copper	10	.98	4		
Iron	100	4.3	33	-0.30	<100
Lead	10	.79	1.8		
Lithium	10	2	6.3		
Magnesium	100	19	37		
Manganese	10	3.6	1.1		
Molybdenum	10	.19	1.1		
Nickel	10	.67	1		
Potassium	500	37	50		
Selenium	10	1.7	3.6		
Silver	10	.42	1.4		
Sodium	500	89	53	-88	<500
Strontium	10	.08	1		
Thallium	5.0	1.4	1.6		
Tin	10	.51	.9		
Titanium	10	.34	1.7		
Vanadium	10	.28	.9		
Zinc	20	9.9	4.3		

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	TD11718-2 Original	MS	Spikelot ICPSPIKE	1% Rec	QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	303	1180	1000	87.7	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	anr				
Potassium					
Selenium	anr				
Silver	anr				
Sodium	1250000	1210000	10000	-400.0(a	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc	anr				

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 11/17/17

Metal	TD11718-2 Original	MSD	Spikelot ICPSPIKE1%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	anr					
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	303	1230	1000	92.7	4.1	20
Lead	anr					
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silver	anr					
Sodium	1250000	1270000	10000	200.0(a)	4.8	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	976	1000	97.6	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	9770	10000	97.7	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD12337
Account: ALGC - SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - Chandler, AZ

QC Batch ID: MP9843
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/17/17

Metal	TD11718-2 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	303	287	5.3	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silver	anr			
Sodium	1250000	1370000	9.5	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP9843: TD12337-1, TD12337-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

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e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-002

128159.002

SGS Accutest Job Number: TD12350

Sampling Date: 11/15/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: 54

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **7**
Section 4: Sample Results **8**
4.1: TD12350-1: PT-3D-126-11152017 9
4.2: TD12350-2: PT-3-90-11152017 13
4.3: TD12350-3: PT-1S-90-11152017 17
4.4: TD12350-4: PT-2S-90-11152017 21
4.5: TD12350-5: ERB-11152017 25
4.6: TD12350-6: TRIP BLANK 28
Section 5: Misc. Forms **31**
5.1: Arizona Qualifiers 32
5.2: Chain of Custody 33
Section 6: MS Volatiles - QC Data Summaries **38**
6.1: Method Blank Summary 39
6.2: Blank Spike Summary 43
6.3: Blank Spike/Blank Spike Duplicate Summary 44
6.4: Matrix Spike/Matrix Spike Duplicate Summary 47
Section 7: Misc. Forms (SGS Accutest Southeast) **48**
7.1: Chain of Custody 49
Section 8: MS Volatiles - QC Data (SGS Accutest Southeast) **51**
8.1: Method Blank Summary 52
8.2: Blank Spike Summary 53
8.3: Matrix Spike/Matrix Spike Duplicate Summary 54

SGS Accutest

Sample Summary

Haley & Aldrich

Job No: TD12350

Plymouth Tube Groundwater Monitoring - 128159-002
Project No: 128159.002

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD12350-1	11/15/17	08:10		11/16/17	AQ	Ground Water	PT-3D-126-11152017
TD12350-2	11/15/17	09:00		11/16/17	AQ	Ground Water	PT-3-90-11152017
TD12350-3	11/15/17	10:20		11/16/17	AQ	Ground Water	PT-1S-90-11152017
TD12350-4	11/15/17	11:15		11/16/17	AQ	Ground Water	PT-2S-90-11152017
TD12350-5	11/15/17	12:00		11/16/17	AQ	Ground Water	ERB-11152017
TD12350-6	11/15/17	00:00		11/16/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD12350
Site:	Plymouth Tube Groundwater Monitoring - 128159-002	**Report Date**	11/28/2017 3:37:51 P

5 Sample(s) collected on 11/15/2017 and received intact at Accutest on 11/16/2017 and properly preserved in 1 cooler at 2.8 Deg C. The samples received an Accutest job number of TD12350. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1853

- All data for batch F:MS38899 was analyzed at SGS Accutest, Fl.

MS Volatiles By Method SW846 8260C

Matrix: AQ	Batch ID: VZ5488

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Chloroethane are outside control limits.
- VZ5488-BSD: Insufficient sample available for MS/MSD. AZ:N1,Q9
- TD12350-2 for Chloroethane: AZ:L1
- TD12350-4 for Tetrachloroethylene: AZ:E4
- VZ5488-BS for Chloroethane: Outside control limits biased high. Analyte not detected in associated samples.
- TD12350-4 for Dichlorodifluoromethane: AZ:V1
- TD12350-6 for Chloroethane: AZ:L1
- TD12350-6 for Methyl chloride: AZ:V1
- TD12350-6 for Trichlorofluoromethane: AZ:V1
- TD12350-1 for Chloroethane: AZ:L1
- TD12350-1 for Dichlorodifluoromethane: AZ:V1
- TD12350-1 for Methyl chloride: AZ:V1
- TD12350-2 for Dichlorodifluoromethane: AZ:V1
- TD12350-1 for Trichlorofluoromethane: AZ:V1
- TD12350-2 for Methyl chloride: AZ:V1
- TD12350-2 for Trichlorofluoromethane: AZ:V1
- TD12350-3 for Chloroethane: AZ:L1
- TD12350-3 for Dichlorodifluoromethane: AZ:V1
- TD12350-3 for Methyl chloride: AZ:V1
- TD12350-3 for Trichlorofluoromethane: AZ:V1
- TD12350-4 for Chloroform: AZ:E4
- TD12350-6 for Dichlorodifluoromethane: AZ:V1
- TD12350-4 for Chloroethane: AZ:L1
- TD12350-5 for Trichlorofluoromethane: AZ:V1
- TD12350-4 for Methyl chloride: AZ:V1
- TD12350-4 for Trichlorofluoromethane: AZ:V1
- TD12350-5 for Chloroethane: AZ:L1
- TD12350-5 for Dichlorodifluoromethane: AZ:V1
- TD12350-5 for Methyl chloride: AZ:V1

Matrix: AQ	Batch ID: VZ5490

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD12350-4MS, TD12350-4MSD were used as the QC samples indicated.
- TD12350-4 for Trichloroethylene: AZ:D2

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Accutest Gulf Coast	**Job**	TD12350
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring -	**Report**	11/27/2017 12:49:36

4 Samples were collected on 11/15/2017 and were received at SGS Accutest Southeast (SASE) on 11/21/2017 properly preserved, at 4.9 Deg. C and intact. These Samples received an SASE job number of TD12350. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1853

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA49572-3MS, FA49572-3MSD were used as the QC samples indicated.

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

Date: November 27, 2017

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD12350
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002
Collected: 11/15/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD12350-1	**PT-3D-126-11152017**					
Bromoform		1.4	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene		0.67	0.50	0.30	ug/l	SW846 8260C
TD12350-2	**PT-3-90-11152017**					
1,4-Dioxane [a]		10.6	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		22.1	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene		168	0.50	0.30	ug/l	SW846 8260C
TD12350-3	**PT-1S-90-11152017**					
1,4-Dioxane [a]		16.2	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		26.5	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene		87.7	0.50	0.30	ug/l	SW846 8260C
TD12350-4	**PT-2S-90-11152017**					
1,4-Dioxane [a]		42.3	1.0	0.30	ug/l	SW846 8260B BY SIM
Chloroform [b]		0.45 J	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethane		0.58	0.50	0.30	ug/l	SW846 8260C
1,1-Dichloroethylene		90.8	0.50	0.30	ug/l	SW846 8260C
Tetrachloroethylene [b]		0.37 J	0.50	0.30	ug/l	SW846 8260C
Trichloroethylene [c]		538	5.0	3.0	ug/l	SW846 8260C

TD12350-5 **ERB-11152017**

No hits reported in this sample.

TD12350-6 **TRIP BLANK**

No hits reported in this sample.

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) AZ:E4
(c) AZ:D2

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60429.D	1	11/21/17 22:58	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	1.4	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	0.67	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3D-126-11152017		
Lab Sample ID:	TD12350-1	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49360.D	1	11/22/17 16:11	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	106%		74-125%
2037-26-5	Toluene-D8	96%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60430.D	1	11/21/17 23:22	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	22.1	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	168	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-11152017		
Lab Sample ID:	TD12350-2	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49361.D	1	11/22/17 16:36	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	10.6	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	107%		74-125%
2037-26-5	Toluene-D8	106%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60431.D	1	11/21/17 23:46	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	26.5	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	87.7	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-1S-90-11152017		
Lab Sample ID:	TD12350-3	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49362.D	1	11/22/17 17:01	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	16.2	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	107%		74-125%
2037-26-5	Toluene-D8	105%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60432.D	1	11/22/17 00:11	EM	n/a	n/a	VZ5488
Run #2	Z60476.D	10	11/22/17 21:28	EM	n/a	n/a	VZ5490

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform [b]	0.45	0.50	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	0.58	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	90.8	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [c]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [c]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene [b]	0.37	0.50	0.30	ug/l	J
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene [d]	538 [e]	5.0	3.0	ug/l	
75-69-4	Trichlorofluoromethane [c]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	105%	108%	68-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	100%	104%	80-119%
460-00-4	4-Bromofluorobenzene	101%	100%	72-126%

(a) AZ:L1
(b) AZ:E4
(c) AZ:V1
(d) AZ:D2
(e) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-11152017		
Lab Sample ID:	TD12350-4	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49363.D	1	11/22/17 17:25	AFL	n/a	n/a	F:VZ1853
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	42.3	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	106%		74-125%
2037-26-5	Toluene-D8	109%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-11152017		
Lab Sample ID:	TD12350-5	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60433.D	1	11/22/17 00:35	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-11152017		
Lab Sample ID:	TD12350-5	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-11152017		
Lab Sample ID:	TD12350-5	**Date Sampled:**	11/15/17
Matrix:	AQ - Ground Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD12350-6	**Date Sampled:**	11/15/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z60428.D	1	11/21/17 22:34	EM	n/a	n/a	VZ5488
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD12350-6	**Date Sampled:**	11/15/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride [b]	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD12350-6	**Date Sampled:**	11/15/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	11/16/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-002		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:L1
(b) AZ:V1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L1	The associated blank spike recovery was above laboratory acceptance limits.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

pg 1 of 1

SGS PHOENIX ACCUTEST CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking # 7707 6031 2333
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: C TD12350

Client / Reporting Information

Company Name: Haley + Aldrich
Address: 400 E. Van Buren St.
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / C Nemanic

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-002
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	8260SIM (1,4-Dioxane)	LAB USE ONLY
1	PT-3D-126-11152017	11-15-17	0810	LP/CN	GW	6	6								X	X	
2	PT-3-90-11152017		0900			6	6								X	X	
3	PT-1S-90-11152017		1020			6	6								X	X	
4	PT-2S-90-11152017		1115			6	6								X	X	
5	ERB-11152017		1200			3	3								X		
6	Trip Blank					2	2								X		

Matrix Codes
WW- Wastewater
GW- Ground Water
SW- Surface Water
SO- Soil
OI-Oil
WP-Wipe
LIQ - Non-aqueous Liquid
AIR
DW- Drinking Water (Perchlorate Only)

LAGGED BY:

Turnaround Time (Business days)

- [ ] 10 Day
- [x] 5 Day Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Approved By:/ Date:

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

VERIFIED BY:

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 [signature] 11-15-17	11/15/17 13:40	1 [signature] Ashley Yoan	2 Ashley Yoan	11/15/17 1600	2 Fed Ex
Relinquished by: 3 FedEx 13:40	Date Time: 11/16/17 945	Received By: 3 [signature]	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Appropriate Bottle / Pres. Y / N Headspace Y / N On Ice Y / N Labels match Coc? Y / N Separate Receiving Check List used: Y / N	Cooler Temp. 2.8 °C oC

5.2
5

TD12350: Chain of Custody
Page 1 of 5

SGS ACCUTEST

COOLER TEMP FORM

TC# TD12350

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 11-16-17

Client: Haley & Aldrich

Cooler Number: 1

Thermometer ID: 029 CF, °C 0 Corrected Temp, °C 2.8

SAMPLES CONTAINED IN COOLER

Fed # 770760312333

ADING INSPECTION,
IPANY.

Form: SM027-06 Rev 10/24/2016

TD12350: Chain of Custody
Page 2 of 5

5.2 5

SGS Accutest Sample Receipt Summary

Job Number: TD12350 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: 11/16/2017 9:45:00 AM **Delivery Method:** **Airbill #'s:** 770760312333

No. Coolers: 1 **Therm ID:** IR9; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (2.8/2.8);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:			
3. Cooler media:	Ice (Bag)		

Quality Control Preservation	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	☑		☐	☐	☑	☐
2. Trip Blank listed on COC:	☑		☐	☐		
3. Samples preserved properly:	☑		☐			
4. VOCs headspace free:	☑		☐	☐		

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Sample Receipt Log

Job #: TD12350 **Date / Time Received:** 11/16/2017 9:45:00 AM 9:45: **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD12350-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-3	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-4	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8

Sample Receipt Log

Job #: TD12350 **Date / Time Received:** 11/16/2017 9:45:00 AM 9:45: **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD12350-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8
1	TD12350-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.8	0	2.8

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-MB	Z60427.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/l	
71-43-2	Benzene	ND	0.50	0.30	ug/l	
108-86-1	Bromobenzene	ND	0.50	0.30	ug/l	
74-97-5	Bromochloromethane	ND	0.50	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	0.50	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	0.50	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	0.50	0.30	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.33	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	0.50	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	0.50	0.30	ug/l	
108-20-3	Di-Isopropyl ether	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.30	ug/l	
100-41-4	Ethylbenzene	ND	0.50	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-MB	Z60427.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	0.50	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	0.50	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.3	ug/l	
74-83-9	Methyl bromide	ND	0.50	0.49	ug/l	
74-87-3	Methyl chloride	ND	0.50	0.30	ug/l	
74-95-3	Methylene bromide	ND	0.50	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	0.50	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	0.50	0.30	ug/l	
100-42-5	Styrene	ND	0.50	0.30	ug/l	
994-05-8	Tert-Amyl Methyl Ether	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	0.50	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	0.50	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.30	ug/l	
108-88-3	Toluene	ND	0.50	0.30	ug/l	
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	
1330-20-7	Xylene (total)	ND	1.5	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-MB	Z60427.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	103%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	100%	72-126%

Method Blank Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5490-MB	Z60475.D	1	11/22/17	EM	n/a	n/a	VZ5490

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-4

CAS No.	Compound	Result	RL	MDL	Units	Q
79-01-6	Trichloroethylene	ND	0.50	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	68-124%
2037-26-5	Toluene-D8	103%	80-119%
460-00-4	4-Bromofluorobenzene	102%	72-126%

Blank Spike Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5490-BS	Z60473.D	1	11/22/17	EM	n/a	n/a	VZ5490

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
79-01-6	Trichloroethylene	25	25.1	100	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	68-124%
2037-26-5	Toluene-D8	102%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-BS	Z60422.D	1	11/21/17	EM	n/a	n/a	VZ5488
VZ5488-BSD [a]	Z60423.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	125	124	99	124	99	0	46-129/30
71-43-2	Benzene	25	24.4	98	25.5	102	4	68-119/30
108-86-1	Bromobenzene	25	24.1	96	25.7	103	6	71-119/30
74-97-5	Bromochloromethane	25	25.6	102	26.7	107	4	71-118/30
75-27-4	Bromodichloromethane	25	25.5	102	27.0	108	6	72-118/30
75-25-2	Bromoform	25	21.8	87	23.0	92	5	54-123/30
104-51-8	n-Butylbenzene	25	26.6	106	27.7	111	4	66-123/30
135-98-8	sec-Butylbenzene	25	26.5	106	28.0	112	6	72-123/30
98-06-6	tert-Butylbenzene	25	25.8	103	26.9	108	4	70-124/30
108-90-7	Chlorobenzene	25	24.2	97	25.2	101	4	74-120/30
75-00-3	Chloroethane	25	36.0	144* [b]	37.2	149* [b]	3	61-132/30
67-66-3	Chloroform	25	25.0	100	26.0	104	4	73-122/30
95-49-8	o-Chlorotoluene	25	25.0	100	26.2	105	5	71-122/30
106-43-4	p-Chlorotoluene	25	25.5	102	26.7	107	5	73-120/30
56-23-5	Carbon tetrachloride	25	26.8	107	27.9	112	4	73-133/30
75-34-3	1,1-Dichloroethane	25	28.4	114	29.6	118	4	72-121/30
75-35-4	1,1-Dichloroethylene	25	28.8	115	29.4	118	2	67-140/30
563-58-6	1,1-Dichloropropene	25	25.9	104	27.3	109	5	73-130/30
96-12-8	1,2-Dibromo-3-chloropropane	25	24.4	98	25.1	100	3	57-133/30
106-93-4	1,2-Dibromoethane	25	25.0	100	26.3	105	5	69-121/30
107-06-2	1,2-Dichloroethane	25	24.9	100	25.7	103	3	68-121/30
78-87-5	1,2-Dichloropropane	25	25.0	100	26.1	104	4	72-116/30
142-28-9	1,3-Dichloropropane	25	23.6	94	24.7	99	5	70-118/30
108-20-3	Di-Isopropyl ether	25	26.4	106	27.5	110	4	67-117/30
594-20-7	2,2-Dichloropropane	25	25.7	103	26.1	104	2	57-141/30
124-48-1	Dibromochloromethane	25	27.4	110	28.8	115	5	68-119/30
75-71-8	Dichlorodifluoromethane	25	31.9	128	33.2	133	4	29-182/30
156-59-2	cis-1,2-Dichloroethylene	25	27.1	108	28.2	113	4	72-117/30
10061-01-5	cis-1,3-Dichloropropene	25	24.4	98	25.5	102	4	71-118/30
541-73-1	m-Dichlorobenzene	25	24.3	97	26.1	104	7	73-117/30
95-50-1	o-Dichlorobenzene	25	23.9	96	25.0	100	4	71-117/30
106-46-7	p-Dichlorobenzene	25	23.7	95	24.8	99	5	71-116/30
156-60-5	trans-1,2-Dichloroethylene	25	28.7	115	29.6	118	3	68-124/30
10061-02-6	trans-1,3-Dichloropropene	25	23.7	95	24.4	98	3	72-127/30
100-41-4	Ethylbenzene	25	25.3	101	26.1	104	3	71-117/30
637-92-3	Ethyl tert-Butyl Ether	25	24.1	96	25.2	101	4	66-122/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-BS	Z60422.D	1	11/21/17	EM	n/a	n/a	VZ5488
VZ5488-BSD [a]	Z60423.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	125	129	103	131	105	2	49-124/30
87-68-3	Hexachlorobutadiene	25	26.4	106	27.6	110	4	62-143/30
98-82-8	Isopropylbenzene	25	27.0	108	28.5	114	5	74-141/30
99-87-6	p-Isopropyltoluene	25	26.2	105	27.4	110	4	72-126/30
108-10-1	4-Methyl-2-pentanone	125	125	100	128	102	2	54-122/30
74-83-9	Methyl bromide	25	30.3	121	31.4	126	4	53-138/30
74-87-3	Methyl chloride	25	32.1	128	32.7	131	2	50-145/30
74-95-3	Methylene bromide	25	24.9	100	25.6	102	3	71-117/30
75-09-2	Methylene chloride	25	28.0	112	27.1	108	3	60-125/30
78-93-3	Methyl ethyl ketone	125	135	108	136	109	1	51-129/30
1634-04-4	Methyl Tert Butyl Ether	25	24.8	99	25.5	102	3	65-119/30
91-20-3	Naphthalene	25	26.3	105	27.1	108	3	53-139/30
103-65-1	n-Propylbenzene	25	25.7	103	26.8	107	4	72-123/30
100-42-5	Styrene	25	25.8	103	26.8	107	4	74-119/30
994-05-8	Tert-Amyl Methyl Ether	25	22.6	90	23.7	95	5	63-119/30
75-65-0	Tert Butyl Alcohol	250	230	92	235	94	2	45-146/30
630-20-6	1,1,1,2-Tetrachloroethane	25	26.5	106	27.8	111	5	74-119/30
71-55-6	1,1,1-Trichloroethane	25	27.3	109	28.8	115	5	72-129/30
79-34-5	1,1,2,2-Tetrachloroethane	25	25.2	101	26.2	105	4	62-121/30
79-00-5	1,1,2-Trichloroethane	25	24.9	100	25.4	102	2	70-119/30
87-61-6	1,2,3-Trichlorobenzene	25	24.7	99	25.6	102	4	44-144/30
96-18-4	1,2,3-Trichloropropane	25	24.7	99	25.2	101	2	61-124/30
120-82-1	1,2,4-Trichlorobenzene	25	24.8	99	25.4	102	2	57-132/30
95-63-6	1,2,4-Trimethylbenzene	25	24.8	99	26.2	105	5	70-121/30
108-67-8	1,3,5-Trimethylbenzene	25	26.4	106	27.7	111	5	66-119/30
127-18-4	Tetrachloroethylene	25	27.0	108	28.0	112	4	72-132/30
108-88-3	Toluene	25	24.3	97	25.2	101	4	73-119/30
79-01-6	Trichloroethylene	25	26.1	104	27.1	108	4	73-121/30
75-69-4	Trichlorofluoromethane	25	34.9	140	36.6	146	5	46-152/30
75-01-4	Vinyl chloride	25	26.1	104	27.4	110	5	54-126/30
1330-20-7	Xylene (total)	75	75.1	100	79.2	106	5	74-119/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	106%	105%	72-122%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5488-BS	Z60422.D	1	11/21/17	EM	n/a	n/a	VZ5488
VZ5488-BSD [a]	Z60423.D	1	11/21/17	EM	n/a	n/a	VZ5488

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-1, TD12350-2, TD12350-3, TD12350-4, TD12350-5, TD12350-6

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
17060-07-0	1,2-Dichloroethane-D4	103%	103%	68-124%
2037-26-5	Toluene-D8	101%	100%	80-119%
460-00-4	4-Bromofluorobenzene	102%	103%	72-126%

(a) Insufficient sample available for MS/MSD. AZ:N1,Q9
(b) Outside control limits biased high. Analyte not detected in associated samples.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD12350
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD12350-4MS	Z60477.D	10	11/22/17	EM	n/a	n/a	VZ5490
TD12350-4MSD	Z60478.D	10	11/22/17	EM	n/a	n/a	VZ5490
TD12350-4	Z60476.D	10	11/22/17	EM	n/a	n/a	VZ5490

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD12350-4

CAS No.	Compound	TD12350-4 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
79-01-6	Trichloroethylene	538		250	762	90	250	774	94	2	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD12350-4	Limits
1868-53-7	Dibromofluoromethane	108%	108%	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	109%	108%	68-124%
2037-26-5	Toluene-D8	102%	102%	104%	80-119%
460-00-4	4-Bromofluorobenzene	106%	104%	100%	72-126%

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Southeast)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD12350

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - Chandler, AZ
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX.	LAB USE ONLY
1	PT-3D-126-11152017		11/15/17	8:10:00 AM		AQ										X	
2	PT-3-90-11152017		11/15/17	9:00:00 AM		AQ										X	
3	PT-15-90-11152017		11/15/17	10:20:00 AM		AQ										X	
4	PT-25-90-11152017		11/15/17	11:15:00 AM		AQ										X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other 27-Nov

Emergency & Rush TIA data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	11/20/17 1800	1	2		2 11/21/17 930
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp. 4.9

7.1

7

TD12350: Chain of Custody
Page 1 of 2
SGS Accutest Southeast

SGS Accutest Sample Receipt Summary

Job Number: TD12350 **Client:** ALGC **Project:** PLYMOUTH TUBE

Date / Time Received: 11/21/2017 9:30:00 AM **Delivery Method:** FED EX **Airbill #'s:** 1001891723010003281100564246214909

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.5);

Cooler Temps (Corrected) °C: Cooler 1: (4.9);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☑	☐
2. Trip Blank listed on COC	☐		☑	☐
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☐		☑	
7. VOCs have headspace	☐		☑	☐
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments SAMPLE #3 ID SHOULD BE PT-1S NOT 15. SAMPLE #4 ID SHOULD BE PT-2S NOT 25.

SM001
Rev. Date 05/24/17

Technician: SHAYLAP Date: 11/21/2017 9:30:00 A Reviewer: P.H Date: 11/21/2017

7.1

7

TD12350: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

(SGS Accutest Southeast)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD12350
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1853-MB	Z49345.D	1	11/22/17	MM	n/a	n/a	VZ1853

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD12350-1, TD12350-2, TD12350-3, TD12350-4

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	105%	74-125%
2037-26-5	Toluene-D8	103%	88-111%

Blank Spike Summary

Job Number: TD12350
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1853-BS	Z49343.D	1	11/22/17	MM	n/a	n/a	VZ1853

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD12350-1, TD12350-2, TD12350-3, TD12350-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.1	91	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	104%	74-125%
2037-26-5	Toluene-D8	104%	88-111%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD12350
Account: ALGC SGS Accutest Gulf Coast
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-002

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA49572-3MS	Z49364.D	1	11/22/17	MM	n/a	n/a	VZ1853
FA49572-3MSD	Z49365.D	1	11/22/17	MM	n/a	n/a	VZ1853
FA49572-3	Z49348.D	1	11/22/17	MM	n/a	n/a	VZ1853

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD12350-1, TD12350-2, TD12350-3, TD12350-4

CAS No.	Compound	FA49572-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	6.7		20	26.5	99	20	26.1	97	2	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA49572-3	Limits
17060-07-0	1,2-Dichloroethane-D4	110%	112%	110%	74-125%
2037-26-5	Toluene-D8	103%	104%	103%	88-111%

8.3.1

8

* = Outside of Control Limits.

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-003

128159-003

SGS Job Number: TD14014

Sampling Date: 12/19/17

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: **112**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Table of Contents

-1-

Section 1: Sample Summary 3
Section 2: Case Narrative/Conformance Summary 4
Section 3: Summary of Hits 8
Section 4: Sample Results 10
4.1: TD14014-1: PT-3-90-121917 11
4.2: TD14014-2: PT-2S-90-121917 18
4.3: TD14014-3: LB-7R-90-121917 25
4.4: TD14014-4: ISCO-1-S-85-121917 32
4.5: TD14014-5: ISCO-1-D-98-121917 39
4.6: TD14014-6: LB-7R-90-121917-DUP 46
4.7: TD14014-7: ERB-121917 49
4.8: TD14014-8: TRIP BLANK 52
Section 5: Subcontract Lab Data 55
Section 6: Misc. Forms 69
6.1: Arizona Qualifiers 70
6.2: Chain of Custody 71
Section 7: MS Volatiles - QC Data Summaries 77
7.1: Method Blank Summary 78
7.2: Blank Spike Summary 81
7.3: Matrix Spike/Matrix Spike Duplicate Summary 84
Section 8: GC Volatiles - QC Data Summaries 87
8.1: Method Blank Summary 88
8.2: Blank Spike/Blank Spike Duplicate Summary 89
Section 9: General Chemistry - QC Data Summaries 90
9.1: Method Blank and Spike Results Summary 91
9.2: Duplicate Results Summary 92
9.3: Matrix Spike Results Summary 93
Section 10: Misc. Forms (SGS Orlando, FL) 94
10.1: Chain of Custody 95
Section 11: MS Volatiles - QC Data (SGS Orlando, FL) 97
11.1: Method Blank Summary 98
11.2: Blank Spike Summary 100
11.3: Matrix Spike/Matrix Spike Duplicate Summary 102
Section 12: Misc. Forms (SGS Scott, LA) 104
12.1: Chain of Custody 105
Section 13: Metals Analysis - QC Data (SGS Scott, LA) 107
13.1: Prep QC MP10205: Fe,Na 108

SGS North America Inc.

Sample Summary

Haley & Aldrich

Job No: TD14014

Plymouth Tube Groundwater Monitoring - 128159-003
Project No: 128159-003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD14014-1	12/19/17	09:10		12/20/17	AQ	Ground Water	PT-3-90-121917
TD14014-1X	12/19/17	09:10		12/20/17	AQ	Ground Water	PT-3-90-121917
TD14014-2	12/19/17	10:35		12/20/17	AQ	Ground Water	PT-2S-90-121917
TD14014-2X	12/19/17	10:35		12/20/17	AQ	Ground Water	PT-2S-90-121917
TD14014-3	12/19/17	11:45		12/20/17	AQ	Ground Water	LB-7R-90-121917
TD14014-3X	12/19/17	11:45		12/20/17	AQ	Ground Water	LB-7R-90-121917
TD14014-4	12/19/17	13:20		12/20/17	AQ	Ground Water	ISCO-1-S-85-121917
TD14014-4X	12/19/17	13:20		12/20/17	AQ	Ground Water	ISCO-1-S-85-121917
TD14014-5	12/19/17	14:30		12/20/17	AQ	Ground Water	ISCO-1-D-98-121917
TD14014-5X	12/19/17	14:30		12/20/17	AQ	Ground Water	ISCO-1-D-98-121917
TD14014-6	12/19/17	11:50		12/20/17	AQ	Ground Water	LB-7R-90-121917-DUP
TD14014-7	12/19/17	12:20		12/20/17	AQ	Ground Water	ERB-121917
TD14014-8	12/19/17	00:00		12/20/17	AQ	Trip Blank Water	TRIP BLANK

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD14014
Site:	Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	1/2/2018 4:03:05 PM

7 Samples were collected on 12/19/2017 and received intact at Accutest on 12/20/2017 and properly preserved in 1 cooler at 1 Deg C. The samples received an Accutest job number of TD14014. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1874

- Analysis performed at SGS Accutest, Orlando, FL.

Matrix: AQ **Batch ID:** F:VZ1875

- Analysis performed at SGS Accutest, Orlando, FL.

MS Volatiles By Method SW846 8260C

Matrix: AQ **Batch ID:** VE2876

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD14135-2MS, TD14135-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Chloroethane are outside control limits.
- Matrix Spike Recovery(s) for Chloroethane are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Chloroethane are outside control limits. Probable cause due to matrix interference.
- TD14014-4: AZ:D2
- TD14014-4 for Chloroethane: AZ:V1,L1
- TD14014-4 for 1,1-Dichloroethane: AZ:E4
- TD14014-4 for Bromoform: AZ:E4
- TD14014-3 for Acetone: AZ:E4
- TD14014-7 for Chloroethane: AZ:V1,L1
- TD14014-6 for Chloroethane: AZ:V1,L1
- TD14014-6 for Trichloroethylene: AZ:E4
- TD14014-6 for Acetone: AZ:E4
- TD14014-5 for Chloroethane: AZ:V1,L1
- TD14014-5 for Bromoform: AZ:E4
- TD14014-3 for Chloroethane: AZ:V1,L1
- TD14014-3 for Bromoform: AZ:E4
- TD14014-1 for Chloroethane: AZ:V1,L1
- TD14014-2 for Chloroethane: AZ:V1,L1
- TD14014-8 for Chloroethane: AZ:V1,L1
- TD14014-3 for Trichloroethylene: AZ:E4

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ	**Batch ID:** GSS829

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- GSS829-BSD: Insufficient sample for MS/MSD. AZ:Q9

Metals Analysis By Method SW846 6010C

Matrix: AQ	**Batch ID:** L:MP10205

- All data for batch L:MP10205 was analyzed at SGS Accutest, La.
- TD14014-5 for Sodium: AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
- TD14014-4 for Sodium: AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
- TD14014-3 for Sodium: AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

General Chemistry By Method EPA 300.0

Matrix: AQ	**Batch ID:** GP45570

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD14014-1DUP, TD14014-1MS were used as the QC samples for Nitrogen, Nitrate, Nitrogen, Nitrite, Nitrogen, Nitrate.
- Matrix Spike Recovery(s) for Nitrogen, Nitrate are outside control limits. Outside control limits due to matrix interference.

Matrix: AQ	**Batch ID:** GP45597

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD14014-1DUP, TD14014-1MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ	**Batch ID:** GN86736

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD14014-1DUP, TD14014-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5 Sample received and analyzed out of holding time.

SGS Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS Houston, TX **Job No** TD14014

Site: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003 **Report Date** 12/28/2017 4:03:48 P

5 samples, 0 trip blanks and 0 field blanks were collected on 12/19/2017 and were received intact at Accutest on 12/20/2017, properly preserved and cool at 2.6 Deg C. These Samples received an Accutest job number of TD14014. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP10205

- Sample(s) LA39947-2MS, LA39947-2MSD, LA39947-2SDL were used as the QC samples for metals.
- Matrix Spike Duplicate Recovery(s) for Iron are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- RPD(s) for Serial Dilution for Sodium are outside control limits for sample MP10205-SDL. Serial Dilution indicates possible matrix interference.
- TD14014-5 for Sodium: AZ:D2
- TD14014-4 for Sodium: AZ:D2
- TD14014-3 for Sodium: AZ:D2
- MP10205-SDL for Sodium: Spike recovery indicates possible matrix interference or sample non-homogeneity.

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Houston, TX	**Job**	TD14014
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring -	**Report**	1/2/2018 10:23:39

5 Samples were collected on 12/19/2017 and were received at SGS Accutest Southeast (SASE) on 12/22/2017 properly preserved, at 3.4 Deg. C and intact. These Samples received an SASE job number of TD14014. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1874

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA50459-1MS, FA50459-1MSD were used as the QC samples indicated.

Sample(s) TD14014-4, TD14014-5 have surrogates outside control limits.

TD14014-4 for Toluene-D8: Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

TD14014-5 for Toluene-D8: Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

TD14014-4: Sample contains residual chlorine. AZ:N1

TD14014-5: Sample contains residual chlorine. AZ:N1

Matrix: AQ **Batch ID:** VZ1875

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA50371-2MS, FA50371-2MSD were used as the QC samples indicated.

Sample(s) TD14014-4, TD14014-5 have surrogates outside control limits.

TD14014-4: Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1

TD14014-5: Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1

TD14014-3: Sample contains residual chlorine. AZ:N1

SGS Accutest (SASE) certifies that this report meets the project requirements for analytical data produced for the samples as received at SASE and as stated on the COC. SASE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SASE Quality Manual except as noted above. This report is to be used in its entirety. SASE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: January 2, 2018

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD14014
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 12/19/17

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD14014-1	**PT-3-90-121917**					
1,4-Dioxane [a]		10.1	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		16.4	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		165	1.0	0.30	ug/l	SW846 8260C
Sodium [b]		448000	500		ug/l	SW846 6010C
Chloride		631	25		mg/l	EPA 300.0
Nitrogen, Nitrate		15.6	0.50		mg/l	EPA 300.0
Sulfate		355	30		mg/l	EPA 300.0
TD14014-2	**PT-2S-90-121917**					
1,4-Dioxane [a]		37.5	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		96.4	4.0	1.2	ug/l	SW846 8260C
Trichloroethylene		608	4.0	1.2	ug/l	SW846 8260C
Sodium [b]		461000	500		ug/l	SW846 6010C
Chloride		693	25		mg/l	EPA 300.0
Sulfate		379	30		mg/l	EPA 300.0
TD14014-3	**LB-7R-90-121917**					
1,4-Dioxane [c]		1.1	1.0	0.30	ug/l	SW846 8260B BY SIM
Acetone [d]		23.5 J	50	10	ug/l	SW846 8260C
Bromoform [d]		0.72 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [d]		0.45 J	1.0	0.30	ug/l	SW846 8260C
Sodium [e]		2340000	2500		ug/l	SW846 6010C
Chloride		843	50		mg/l	EPA 300.0
Sulfate		1690	60		mg/l	EPA 300.0
TD14014-4	**ISCO-1-S-85-121917**					
1,4-Dioxane [c]		20.9	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform [f]		0.52 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [f]		0.46 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [g]		36.3	1.0	0.30	ug/l	SW846 8260C
Iron [b]		610	100		ug/l	SW846 6010C
Sodium [e]		1500000	2500		ug/l	SW846 6010C
Chloride		628	50		mg/l	EPA 300.0
Sulfate		1030	60		mg/l	EPA 300.0
TD14014-5	**ISCO-1-D-98-121917**					
1,4-Dioxane [c]		8.5	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform [d]		0.77 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		11.0	1.0	0.30	ug/l	SW846 8260C

Summary of Hits

Job Number: TD14014
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 12/19/17

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Iron [b]		893	100		ug/l	SW846 6010C
Sodium [e]		2260000	2500		ug/l	SW846 6010C
Chloride		617	50		mg/l	EPA 300.0
Sulfate		2050	60		mg/l	EPA 300.0
TD14014-6	**LB-7R-90-121917-DUP**					
Acetone [d]		25.8 J	50	10	ug/l	SW846 8260C
Bromoform		1.2	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene [d]		0.35 J	1.0	0.30	ug/l	SW846 8260C
TD14014-7	**ERB-121917**					
No hits reported in this sample.						
TD14014-8	**TRIP BLANK**					
Toluene		1.0	1.0	0.30	ug/l	SW846 8260C

(a) Analysis performed at SGS Accutest, Orlando, FL.
(b) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(c) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(d) AZ:E4
(e) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(f) AZ:D2 AZ:E4
(g) AZ:D2

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064813.D	1	12/27/17 15:06	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	16.4	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	165	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	79%		68-124%
2037-26-5	Toluene-D8	100%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49933.D	1	12/26/17 13:21	AFL	n/a	n/a	F:VZ1874
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	10.1	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		74-125%
2037-26-5	Toluene-D8	104%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018860.D	1	12/29/17 12:45	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	448000	500	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA10276
(2) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-121917		
Lab Sample ID:	TD14014-1	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	631	25	mg/l	50	12/21/17 10:06	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Nitrogen, Nitrate	15.6	0.50	mg/l	1	12/20/17 19:41	ES	EPA 300.0
Nitrogen, Nitrite	< 0.50	0.50	mg/l	1	12/20/17 19:41	ES	EPA 300.0
Sulfate	355	30	mg/l	50	12/21/17 10:06	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064814.D	4	12/27/17 15:30	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	200	40	ug/l	
71-43-2	Benzene	ND	4.0	1.2	ug/l	
108-86-1	Bromobenzene	ND	4.0	1.2	ug/l	
74-97-5	Bromochloromethane	ND	4.0	1.2	ug/l	
75-27-4	Bromodichloromethane	ND	4.0	1.2	ug/l	
75-25-2	Bromoform	ND	4.0	1.2	ug/l	
104-51-8	n-Butylbenzene	ND	4.0	1.2	ug/l	
135-98-8	sec-Butylbenzene	ND	4.0	1.2	ug/l	
98-06-6	tert-Butylbenzene	ND	4.0	1.2	ug/l	
108-90-7	Chlorobenzene	ND	4.0	1.2	ug/l	
75-00-3	Chloroethane [a]	ND	4.0	1.3	ug/l	
67-66-3	Chloroform	ND	4.0	1.2	ug/l	
95-49-8	o-Chlorotoluene	ND	4.0	1.2	ug/l	
106-43-4	p-Chlorotoluene	ND	4.0	1.2	ug/l	
75-15-0	Carbon disulfide	ND	20	3.0	ug/l	
56-23-5	Carbon tetrachloride	ND	4.0	2.2	ug/l	
75-34-3	1,1-Dichloroethane	ND	4.0	1.2	ug/l	
75-35-4	1,1-Dichloroethylene	96.4	4.0	1.2	ug/l	
563-58-6	1,1-Dichloropropene	ND	4.0	1.2	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	8.0	1.3	ug/l	
106-93-4	1,2-Dibromoethane	ND	4.0	1.2	ug/l	
107-06-2	1,2-Dichloroethane	ND	4.0	1.2	ug/l	
78-87-5	1,2-Dichloropropane	ND	4.0	1.2	ug/l	
142-28-9	1,3-Dichloropropane	ND	4.0	1.2	ug/l	
594-20-7	2,2-Dichloropropane	ND	4.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	4.0	1.2	ug/l	
75-71-8	Dichlorodifluoromethane	ND	8.0	2.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	4.0	1.2	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	4.0	1.2	ug/l	
541-73-1	m-Dichlorobenzene	ND	4.0	1.2	ug/l	
95-50-1	o-Dichlorobenzene	ND	4.0	1.2	ug/l	
106-46-7	p-Dichlorobenzene	ND	4.0	1.2	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	4.0	1.2	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	4.0	1.2	ug/l	
100-41-4	Ethylbenzene	ND	4.0	1.2	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	4.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	40	4.6	ug/l	
87-68-3	Hexachlorobutadiene	ND	4.0	1.6	ug/l	
98-82-8	Isopropylbenzene	ND	4.0	1.2	ug/l	
99-87-6	p-Isopropyltoluene	ND	4.0	1.2	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	40	9.4	ug/l	
74-83-9	Methyl bromide	ND	4.0	2.0	ug/l	
74-87-3	Methyl chloride	ND	4.0	1.2	ug/l	
74-95-3	Methylene bromide	ND	4.0	1.2	ug/l	
75-09-2	Methylene chloride	ND	20	5.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	40	10	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	4.0	1.2	ug/l	
91-20-3	Naphthalene	ND	20	2.0	ug/l	
103-65-1	n-Propylbenzene	ND	4.0	1.2	ug/l	
100-42-5	Styrene	ND	4.0	1.2	ug/l	
75-65-0	Tert Butyl Alcohol	ND	80	12	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	4.0	1.2	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	4.0	1.2	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.0	1.2	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	4.0	1.2	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	4.0	1.2	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	4.0	1.5	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	4.0	1.2	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	4.0	1.2	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	4.0	1.2	ug/l	
127-18-4	Tetrachloroethylene	ND	4.0	1.2	ug/l	
108-88-3	Toluene	ND	4.0	1.2	ug/l	
79-01-6	Trichloroethylene	608	4.0	1.2	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	1.2	ug/l	
75-01-4	Vinyl chloride	ND	4.0	1.2	ug/l	
1330-20-7	Xylene (total)	ND	12	2.6	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	81%		68-124%
2037-26-5	Toluene-D8	100%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49934.D	1	12/26/17 13:45	AFL	n/a	n/a	F:VZ1874
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	37.5	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		74-125%
2037-26-5	Toluene-D8	104%		88-111%

(a) Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018861.D	1	12/29/17 12:59	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [a]	461000	500	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA10276
(2) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-121917		
Lab Sample ID:	TD14014-2	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	693	25	mg/l	50	12/21/17 10:53	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	379	30	mg/l	50	12/21/17 10:53	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064815.D	1	12/27/17 15:54	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	23.5	50	10	ug/l	J
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	0.72	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene [a]	0.45	1.0	0.30	ug/l	J
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	83%		68-124%
2037-26-5	Toluene-D8	102%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:E4
(b) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49965.D	1	12/27/17 14:00	AFL	n/a	n/a	F:VZ1875
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	1.1	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	88%		74-125%
2037-26-5	Toluene-D8	90%		88-111%

(a) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018862.D	1	12/29/17 13:14	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [3]
Sodium [b]	2340000	2500	ug/l	5	12/22/17	12/26/17	ALA	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: L:MA10276
(2) Instrument QC Batch: L:MA10285
(3) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-121917		
Lab Sample ID:	TD14014-3	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	843	50	mg/l	100	12/21/17 11:08	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	1690	60	mg/l	100	12/21/17 11:08	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	E0064816.D	1	12/27/17 16:18	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [b]	0.52	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [c]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [b]	0.46	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	36.3	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	82%		68-124%
2037-26-5	Toluene-D8	94%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) AZ:D2
(b) AZ:E4
(c) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49936.D	1	12/26/17 14:35	AFL	n/a	n/a	F:VZ1874
Run #2 [b]	Z49961.D	1	12/27/17 12:22	AFL	n/a	n/a	F:VZ1875

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	20.9	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%	91%	74-125%
2037-26-5	Toluene-D8	84% [c]	82%	88-111%

(a) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(b) Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(c) Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018863.D	1	12/29/17 13:36	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	610	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [3]
Sodium [b]	1500000	2500	ug/l	5	12/22/17	12/26/17	ALA	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: L:MA10276
(2) Instrument QC Batch: L:MA10285
(3) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-S-85-121917		
Lab Sample ID:	TD14014-4	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	628	50	mg/l	100	12/21/17 11:24	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	1030	60	mg/l	100	12/21/17 11:24	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064817.D	1	12/27/17 16:43	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	0.77	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	11.0	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	81%		68-124%
2037-26-5	Toluene-D8	92%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) AZ:E4
(b) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z49937.D	1	12/26/17 15:00	AFL	n/a	n/a	F:VZ1874
Run #2 [b]	Z49962.D	1	12/27/17 12:46	AFL	n/a	n/a	F:VZ1875

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	8.5	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	99%	92%	74-125%
2037-26-5	Toluene-D8	71% [c]	65%	88-111%

(a) Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(b) Confirmation run for surrogate recoveries. Sample contains residual chlorine. AZ:N1 Analysis performed at SGS Accutest, Orlando, FL.
(c) Outside control limits due to matrix interference. Confirmed by reanalysis. AZ:S6

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS018864.D	1	12/29/17 13:58	SC	n/a	n/a	GSS829
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	20.9 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	893	100	ug/l	1	12/22/17	12/23/17	ALA	SW846 6010C [1]	SW846 3010A [3]
Sodium [b]	2260000	2500	ug/l	5	12/22/17	12/26/17	ALA	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: L:MA10276
(2) Instrument QC Batch: L:MA10285
(3) Prep QC Batch: L:MP10205

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-121917		
Lab Sample ID:	TD14014-5	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	617	50	mg/l	100	12/21/17 11:39	ES	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	12/20/17 17:40	SM	SM 3500FE B-2011
Sulfate	2050	60	mg/l	100	12/21/17 11:39	ES	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	LB-7R-90-121917-DUP		
Lab Sample ID:	TD14014-6	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064818.D	1	12/27/17 17:07	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	25.8	50	10	ug/l	J
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	1.2	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917-DUP		
Lab Sample ID:	TD14014-6	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene [a]	0.35	1.0	0.30	ug/l	J
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	83%		68-124%
2037-26-5	Toluene-D8	91%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-121917-DUP		
Lab Sample ID:	TD14014-6	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	96%		72-126%

(a) AZ:E4
(b) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-121917		
Lab Sample ID:	TD14014-7	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064819.D	1	12/27/17 17:31	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-121917		
Lab Sample ID:	TD14014-7	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	82%		68-124%
2037-26-5	Toluene-D8	101%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-121917		
Lab Sample ID:	TD14014-7	**Date Sampled:**	12/19/17
Matrix:	AQ - Ground Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD14014-8	**Date Sampled:**	12/19/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0064820.D	1	12/27/17 17:55	EM	n/a	n/a	VE2876
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD14014-8	**Date Sampled:**	12/19/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	1.0	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	81%		68-124%
2037-26-5	Toluene-D8	102%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	TD14014-8	**Date Sampled:**	12/19/17
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/20/17
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1,L1

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Subcontract Lab Data

Report of Analysis

Analytical Report 572057

for
SGS Accutest

Project Manager: Anita Patel

Plymouth Tube Groundwater Monitoring 128159-003

TD14014

28-DEC-17

Collected By: Client

4147 Greenbriar Dr.
Stafford, TX 77477

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

28-DEC-17

Project Manager: **Anita Patel**
SGS Accutest
10165 Harwin, Suite 150
Houston, TX 77036

Reference: XENCO Report No(s): **572057**
Plymouth Tube Groundwater Monitoring 128159-003
Project Address:

Anita Patel :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 572057. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 572057 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Debbie Simmons
Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Arizona Flags

All method blanks, laboratory spikes, and/or matrix spikes met quality control objectives for the parameters associated with this Work Order except as detailed below or on the Data Qualifier page of this report. Data Qualifiers used in this report are in accordance with ADHS Data Qualifiers, Revision 4.0 9/05/2012.
Data qualifiers (flags) contained within this analytical report have been issued to explain a quality control deficiency, and do not affect the quality (validity) of the data unless noted otherwise in the case narrative.

Sample Cross Reference 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
PT-3-90-121917	W	12-19-17 09:10		572057-001
PT-2S-90-121917	W	12-19-17 10:35		572057-002
PTLB-7R-90-121917	W	12-19-17 11:45		572057-003
ISCO-1-S-85-121917	W	12-19-17 13:20		572057-004
ISCO-1-D-98-121917	W	12-19-17 14:30		572057-005

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **PT-3-90-121917**
Lab Sample Id: 572057-001

Matrix: Water
Date Collected: 12.19.17 09.10

Date Received: 12.22.17 11.30

Analytical Method: Alkalinity by SM2320B
Tech: DHE
Analyst: DHE
Seq Number: 3036939

Date Prep: 12.27.17 12.00

Prep Method: SM2320P
% Moisture:

5

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3	471-34-1	**347**	4.00	mg/L	12.27.17 11.52		1
Alkalinity, Carbonate (as CaCO3	3812-32-6	<4.00	4.00	mg/L	12.27.17 11.52	U	1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **PT-2S-90-121917**
Lab Sample Id: 572057-002

Matrix: Water
Date Collected: 12.19.17 10.35

Date Received:12.22.17 11.30

Analytical Method: Alkalinity by SM2320B
Tech: DHE
Analyst: DHE
Seq Number: 3036939

Date Prep: 12.27.17 12.00

Prep Method: SM2320P
% Moisture:

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3	471-34-1	**345**	4.00	mg/L	12.27.17 11.59		1
Alkalinity, Carbonate (as CaCO3	3812-32-6	<4.00	4.00	mg/L	12.27.17 11.59	U	1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **PTLB-7R-90-121917** Matrix: Water Date Received:12.22.17 11.30
Lab Sample Id: 572057-003 Date Collected: 12.19.17 11.45

Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
Tech: DHE % Moisture:
Analyst: DHE Date Prep: 12.27.17 12.00
Seq Number: 3036939

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	<4.00	4.00	mg/L	12.27.17 12.08	U	1
Alkalinity, Carbonate (as CaC	3812-32-6	**151**	4.00	mg/L	12.27.17 12.08		1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **ISCO-1-S-85-121917**
Lab Sample Id: 572057-004

Matrix: Water
Date Collected: 12.19.17 13.20

Date Received:12.22.17 11.30

Analytical Method: Alkalinity by SM2320B
Tech: DHE
Analyst: DHE
Seq Number: 3036939

Date Prep: 12.27.17 12.00

Prep Method: SM2320P
% Moisture:

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	<4.00	4.00	mg/L	12.27.17 12.18	U	1
Alkalinity, Carbonate (as CaC	3812-32-6	**313**	4.00	mg/L	12.27.17 12.18		1

Certificate of Analytical Results 572057

SGS Accutest, Houston, TX

Plymouth Tube Groundwater Monitoring 128159-003

Sample Id: **ISCO-1-D-98-121917** Matrix: Water Date Received:12.22.17 11.30
Lab Sample Id: 572057-005 Date Collected: 12.19.17 14.30

Analytical Method: Alkalinity by SM2320B Prep Method: SM2320P
Tech: DHE % Moisture:
Analyst: DHE Date Prep: 12.27.17 12.00
Seq Number: 3036939

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Alkalinity, Bicarbonate (as CaCO3)	471-34-1	<4.00	4.00	mg/L	12.27.17 12.44	U	1
Alkalinity, Carbonate (as CaC	3812-32-6	**341**	4.00	mg/L	12.27.17 12.44		1

QC Summary 572057

SGS Accutest

Plymouth Tube Groundwater Monitoring 128159-003

Analytical Method: **Alkalinity by SM2320B** Prep Method: SM2320P

Seq Number: 3036939 Matrix: Drinking Water Date Prep: 12.27.17

Parent Sample Id: 571948-001 MD Sample Id: 571948-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Alkalinity, Bicarbonate (as CaCO3)	200	200	0	20	mg/L	12.27.17 11:36	
Alkalinity, Carbonate (as CaCO3)	<4.00	<4.00	0	20	mg/L	12.27.17 11:36	U

5

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #

Bottle Order Control # 572057

SGS Accutest Quote #

SGS Accutest Job TD14014

Client / Reporting Information

Company Name: SGS Accutest

Street Address: 10165 Harwin Drive

City: Houston State: TX Zip: 77036

Project Contact: anita.patel@sgs.com E-mail:

Phone #: 713-271-4700 Fax #:

Sampler(s) Name(s) Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003

Street

City State

Project #

Client Purchase Order #

Project Manager

Billing Information (if different from Report to)

Company Name

Street Address

City State Zip

Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Alkalinity, Bicarbonate, Carbonate	LAB USE ONLY
1X	PT-3-90-121917		12/19/17	9:10:00 AM		AQ	1					1				X	
2X	PT-2S-90-121917		12/19/17	10:35:00 AM		AQ	1					1				X	
3X	PTLB-7R-90-121917		12/19/17	11:45:00 AM		AQ	1					1				X	
4X	ISCO-1-S-85-121917		12/19/17	1:20:00 PM		AQ	1					1				X	
5X	ISCO-1-D-98-121917		12/19/17	2:30:00 PM		AQ	1					1				X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY
- ☒ other Standard TAT

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format
- ☒ Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Please include PO#: TD14014 on invoice and report.

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Eddie Pach	12-22-17 1130	1 Jeff Wolz	2		2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☒ Cooler Temp.

IR ID:HOU-068 C/F: 0.4
Temp: 0.2 Corrected: 0.6

XENCO Laboratories
Prelogin/Nonconformance Report- Sample Log-In

Client: SGS Accutest

Date/ Time Received: 12/22/2017 11:30:00 AM

Work Order #: 572057

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : IR:HOU068

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	.6
#2 *Shipping container in good condition?	**Yes**
#3 *Samples received on ice?	**Yes**
#4 *Custody Seals intact on shipping container/ cooler?	**No**
#5 Custody Seals intact on sample bottles?	**N/A**
#6*Custody Seals Signed and dated?	**N/A**
#7 *Chain of Custody present?	**Yes**
#8 Any missing/extra samples?	**No**
#9 Chain of Custody signed when relinquished/ received?	**Yes**
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**
#11 Container label(s) legible and intact?	**Yes**
#12 Samples in proper container/ bottle?	**Yes**
#13 Samples properly preserved?	**Yes**
#14 Sample container(s) intact?	**Yes**
#15 Sufficient sample amount for indicated test(s)?	**Yes**
#16 All samples received within hold time?	**Yes**
#17 Subcontract of sample(s)?	**No**
#18 Water VOC samples have zero headspace?	**N/A**

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: MPG

PH Device/Lot#: Lot#10BDH2271

Checklist completed by: Maria Paula Guerra — Date: 12/22/2017

Checklist reviewed by: Debbie Simmons — Date: 12/26/2017

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L1	The associated blank spike recovery was above laboratory acceptance limits.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

pg 1 of 1

SGS PHOENIX ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking # 7710 4547 0336
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job #: C TD14014

Client / Reporting Information

Company Name: Haley & Aldrich
Address: 400 E. Van Buren St.
City: Phoenix State: AZ Zip: 85004
Project Contact: Bruce Travers
Phone #: 480-244-5891
Samplers's Name: C Price / S Kaney

Project Information

Project Name: Plymouth Tube
Street: W Willis
City: Chandler State: AZ
Project #: 128159-003
EMAIL: btravers@haleyaldrich.com
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	8260SIM (1,4-Dioxane)	EPA 300 - Sulfate	SW846 6010/6020 - Total Iron	6010/6020 - Ferrous Iron Field Filtered 45 Min	RSK 175 - methane, ethane, ethene	2320B - Alkalinity	EPA300 - Chloride	6010/6020 - Sodium			LAB USE ONLY
1	PT-3-90-121917	12-19-17	0910	CP/SK	G-W	11	8		1		2				X	X	X	X	X	X	X	X	X			
2	PT-2S-90-121917		1035			11	8		1		2				X	X	X	X	X	X	X	X	X			
3	PILB-7R-90-121917 *		1145			11	8		1		2				X	X	X	X	X	X	X	X	X			
4	ISCO-1-S-85-121917 *		1320			11	8		1		2				X	X	X	X	X	X	X	X	X			
5	ISCO-1-D-98-121917 *		1430			11	8		1		2				X	X	X	X	X	X	X	X	X			
6	LB-7R-90-121917-DUP		1150			3	3								X						X					
7	ERB-121917		1220			3	3								X											
8	Trip Blank					4	4								X											

* - Samples have high pH 11.8 - 12.2

Matrix Codes: WW- Wastewater; GW- Ground Water; SW- Surface Water; SO- Soil; OI-Oil; WP-Wipe; LIQ - Non-aqueous Liquid; AIR; DW- Drinking Water (Perchlorate Only)

Turnaround Time (Business days)

Approved By:/ Date:

- [x] 10 Day
- [ ] 5 Day
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day
- [ ] Same Day

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" - Results only
- [ ] Commercial "B" - Results with QC summaries
- [ ] Commerical "B+" - Results, QC, and chromatograms
- [ ] FULT1 - Level 4 data package
- [ ] EDF for Geotracker [ ] EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

TD BY:

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Chad	12-19-17 16:12	1 Ashley Frum	2 Ashley Frum	12-19-17 16:35	2 Fed Ex
Relinquished by: 3 GeJ	Date Time: 12-20-17 1045	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	Appropriate Bottle / Pres. Y / N; Labels match Coc? Y / N	Headspace Y / N; Separate Receiving Check List used: Y / N; On Ice Y / N; Cooler Temp. 1.0 oC

6.2 6

TD14014: Chain of Custody
Page 1 of 6

ACCUTEST

COOLER TEMP FORM

TC# II

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 12-2017

Client: Haley & Aldrich

Cooler Number:

Thermometer ID: DKS CF, °C 0 Corrected Temp, °C 1.0

ORIGIN ID:MSCA (480) 275-8931
ASHLEY LOCUM
ACCUTEST TEMPE SERVICE CENTER
1741 W. UNIVERSITY DR.
SUITE 149
TEMPE, AZ 85281
UNITED STATES US

SHIP DATE: 19DEC17
ACTWGT: 58.00 LB
CAD: 104695527/INET:
DIMS: 24x20x18 IN

BILL RECIPIENT

TO SAMPLE RECEIVING
ACCUTEST LABORATORIES
10165 HARWIN DR.
SUITE 150
HOUSTON TX 77071
(713) 271-4700
REF: HALEY&ALDRICH
INV:
PO:
DEPT:

WED - 20 D
PRIORITY O

TRK# 0201 7710 4547 0336

AB SGRA

TX

DING INSPECTION,
PANY.

TD14014: Chain of Custody
Page 2 of 6

SGS Accutest Sample Receipt Summary

Job Number: TD14014 **Client:** HALEY & ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: **Delivery Method:** **Airbill #'s:**

No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (1/1);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☐	☑	☐	☐
2. Trip Blank listed on COC:	☐	☐	☑		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☐	☐	☑		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☑	☐
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments

Sample Receipt Log

Job #: TD14014 **Date / Time Received:** 12/20/2017 10:45:00 AM **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD14014-1	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-1	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-1	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-1	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-1	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-2	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-2	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-2	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-2	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-2	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1

Sample Receipt Log

Job #: TD14014 **Date / Time Received:** 12/20/2017 10:45:00 AM **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD14014-3	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-3	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-3	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-3	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-3	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-3	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-4	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-4	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-4	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-4	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-4	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	1000ml	1	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1
1	TD14014-5	250ml	2	3F	N/P	Note #2 - Preservative check not applicable.	IR-5	1	0	1

Sample Receipt Log

Job #: TD14014 **Date / Time Received:** 12/20/2017 10:45:00 AM **Initials:** EC

Client: HALEY & ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD14014-5	250ml	3	SUB	HNO3	pH < 2	IR-5	1	0	1
1	TD14014-5	40ml	4	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-5	40ml	5	1P	HCL	pH < 2	IR-5	1	0	1
1	TD14014-5	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-5	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1
1	TD14014-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1	0	1

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-MB	E0064801.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-MB	E0064801.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	0.32	1.0	0.30	ug/l	J
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	85%	68-124%

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-MB	E0064801.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

Blank Spike Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-BS	E0064799.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	122	98	46-129
71-43-2	Benzene	25	24.4	98	68-119
108-86-1	Bromobenzene	25	22.3	89	71-119
74-97-5	Bromochloromethane	25	22.9	92	71-118
75-27-4	Bromodichloromethane	25	21.3	85	72-118
75-25-2	Bromoform	25	21.3	85	54-123
104-51-8	n-Butylbenzene	25	24.3	97	66-123
135-98-8	sec-Butylbenzene	25	25.7	103	72-123
98-06-6	tert-Butylbenzene	25	21.9	88	70-124
108-90-7	Chlorobenzene	25	23.0	92	74-120
75-00-3	Chloroethane	25	34.8	139*	61-132
67-66-3	Chloroform	25	22.9	92	73-122
95-49-8	o-Chlorotoluene	25	23.6	94	71-122
106-43-4	p-Chlorotoluene	25	23.2	93	73-120
75-15-0	Carbon disulfide	25	28.5	114	55-140
56-23-5	Carbon tetrachloride	25	23.3	93	68-133
75-34-3	1,1-Dichloroethane	25	26.8	107	72-121
75-35-4	1,1-Dichloroethylene	25	26.8	107	67-140
563-58-6	1,1-Dichloropropene	25	21.0	84	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	20.5	82	47-133
106-93-4	1,2-Dibromoethane	25	22.4	90	69-121
107-06-2	1,2-Dichloroethane	25	20.1	80	68-121
78-87-5	1,2-Dichloropropane	25	24.4	98	72-116
142-28-9	1,3-Dichloropropane	25	22.1	88	70-118
594-20-7	2,2-Dichloropropane	25	26.6	106	57-141
124-48-1	Dibromochloromethane	25	21.8	87	68-119
75-71-8	Dichlorodifluoromethane	25	21.7	87	29-182
156-59-2	cis-1,2-Dichloroethylene	25	26.3	105	72-117
10061-01-5	cis-1,3-Dichloropropene	25	22.1	88	71-118
541-73-1	m-Dichlorobenzene	25	23.5	94	73-117
95-50-1	o-Dichlorobenzene	25	22.5	90	71-117
106-46-7	p-Dichlorobenzene	25	22.4	90	71-116
156-60-5	trans-1,2-Dichloroethylene	25	26.2	105	68-124
10061-02-6	trans-1,3-Dichloropropene	25	22.9	92	72-127
100-41-4	Ethylbenzene	25	23.5	94	71-117
637-92-3	Ethyl tert-Butyl Ether	25	23.0	92	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-BS	E0064799.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	103	82	49-124
87-68-3	Hexachlorobutadiene	25	23.9	96	62-143
98-82-8	Isopropylbenzene	25	26.0	104	74-141
99-87-6	p-Isopropyltoluene	25	24.7	99	72-126
108-10-1	4-Methyl-2-pentanone	125	107	86	54-122
74-83-9	Methyl bromide	25	27.0	108	53-138
74-87-3	Methyl chloride	25	29.8	119	50-145
74-95-3	Methylene bromide	25	21.9	88	71-117
75-09-2	Methylene chloride	25	23.2	93	60-125
78-93-3	Methyl ethyl ketone	125	121	97	51-129
1634-04-4	Methyl Tert Butyl Ether	25	22.9	92	65-119
91-20-3	Naphthalene	25	22.9	92	43-139
103-65-1	n-Propylbenzene	25	24.2	97	72-123
100-42-5	Styrene	25	22.8	91	74-119
75-65-0	Tert Butyl Alcohol	250	213	85	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	22.9	92	74-119
71-55-6	1,1,1-Trichloroethane	25	23.6	94	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	24.0	96	62-121
79-00-5	1,1,2-Trichloroethane	25	23.1	92	70-119
87-61-6	1,2,3-Trichlorobenzene	25	22.2	89	44-144
96-18-4	1,2,3-Trichloropropane	25	21.0	84	61-124
120-82-1	1,2,4-Trichlorobenzene	25	22.7	91	57-132
95-63-6	1,2,4-Trimethylbenzene	25	22.9	92	70-121
108-67-8	1,3,5-Trimethylbenzene	25	24.4	98	66-119
127-18-4	Tetrachloroethylene	25	24.5	98	72-132
108-88-3	Toluene	25	24.0	96	73-119
79-01-6	Trichloroethylene	25	25.0	100	73-121
75-69-4	Trichlorofluoromethane	25	26.0	104	46-152
75-01-4	Vinyl chloride	25	26.5	106	54-126
1330-20-7	Xylene (total)	75	66.8	89	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	86%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2876-BS	E0064799.D	1	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	80-119%
460-00-4	4-Bromofluorobenzene	103%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD14135-2MS	E0064804.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2MSD	E0064805.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2	E0064803.D	10	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	TD14135-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	500 U		1250	1100	88	1250	1080	86	2	46-129/25
71-43-2	Benzene	10 U		250	226	90	250	235	94	4	68-119/12
108-86-1	Bromobenzene	10 U		250	213	85	250	218	87	2	71-119/12
74-97-5	Bromochloromethane	10 U		250	223	89	250	225	90	1	71-118/13
75-27-4	Bromodichloromethane	10 U		250	200	80	250	207	83	3	72-118/16
75-25-2	Bromoform	10 U		250	188	75	250	194	78	3	54-123/17
104-51-8	n-Butylbenzene	10 U		250	226	90	250	230	92	2	66-123/14
135-98-8	sec-Butylbenzene	10 U		250	241	96	250	243	97	1	72-123/13
98-06-6	tert-Butylbenzene	10 U		250	208	83	250	212	85	2	70-124/15
108-90-7	Chlorobenzene	10 U		250	217	87	250	223	89	3	74-120/12
75-00-3	Chloroethane	10 U		250	348	139*	250	348	139*	0	61-132/16
67-66-3	Chloroform	10 U		250	220	88	250	218	87	1	73-122/13
95-49-8	o-Chlorotoluene	10 U		250	220	88	250	223	89	1	71-122/12
106-43-4	p-Chlorotoluene	10 U		250	217	87	250	220	88	1	73-120/12
75-15-0	Carbon disulfide	50 U		250	264	106	250	284	114	7	55-140/24
56-23-5	Carbon tetrachloride	10 U		250	216	86	250	222	89	3	68-133/20
75-34-3	1,1-Dichloroethane	309		250	561	101	250	561	101	0	72-121/14
75-35-4	1,1-Dichloroethylene	1410		250	1620	84	250	1590	72	2	67-140/18
563-58-6	1,1-Dichloropropene	10 U		250	200	80	250	206	82	3	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	20 U		250	189	76	250	193	77	2	47-133/23
106-93-4	1,2-Dibromoethane	10 U		250	216	86	250	219	88	1	69-121/13
107-06-2	1,2-Dichloroethane	10 U		250	197	79	250	198	79	1	68-121/12
78-87-5	1,2-Dichloropropane	10 U		250	231	92	250	230	92	0	72-116/12
142-28-9	1,3-Dichloropropane	10 U		250	215	86	250	217	87	1	70-118/12
594-20-7	2,2-Dichloropropane	10 U		250	261	104	250	273	109	4	57-141/16
124-48-1	Dibromochloromethane	10 U		250	209	84	250	211	84	1	68-119/15
75-71-8	Dichlorodifluoromethane	20 U		250	216	86	250	209	84	3	29-182/23
156-59-2	cis-1,2-Dichloroethylene	9.2	J	250	259	100	250	268	104	3	72-117/13
10061-01-5	cis-1,3-Dichloropropene	10 U		250	208	83	250	214	86	3	71-118/18
541-73-1	m-Dichlorobenzene	10 U		250	219	88	250	224	90	2	73-117/12
95-50-1	o-Dichlorobenzene	10 U		250	213	85	250	218	87	2	71-117/11
106-46-7	p-Dichlorobenzene	10 U		250	211	84	250	217	87	3	71-116/11
156-60-5	trans-1,2-Dichloroethylene	10 U		250	257	103	250	257	103	0	68-124/15
10061-02-6	trans-1,3-Dichloropropene	10 U		250	218	87	250	221	88	1	72-127/17
100-41-4	Ethylbenzene	10 U		250	223	89	250	226	90	1	71-117/12
637-92-3	Ethyl tert-Butyl Ether	10 U		250	219	88	250	225	90	3	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD14135-2MS	E0064804.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2MSD	E0064805.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2	E0064803.D	10	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Compound	TD14135-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	100 U		1250	1000	80	1250	984	79	2	49-124/21
87-68-3	Hexachlorobutadiene	10 U		250	212	85	250	223	89	5	62-143/18
98-82-8	Isopropylbenzene	10 U		250	244	98	250	250	100	2	74-141/13
99-87-6	p-Isopropyltoluene	10 U		250	231	92	250	234	94	1	72-126/13
108-10-1	4-Methyl-2-pentanone	100 U		1250	1040	83	1250	1040	83	0	54-122/20
74-83-9	Methyl bromide	10 U		250	270	108	250	266	106	1	53-138/16
74-87-3	Methyl chloride	10 U		250	295	118	250	322	129	9	50-145/17
74-95-3	Methylene bromide	10 U		250	216	86	250	221	88	2	71-117/12
75-09-2	Methylene chloride	50 U		250	226	90	250	228	91	1	60-125/16
78-93-3	Methyl ethyl ketone	100 U		1250	1130	90	1250	1090	87	4	51-129/22
1634-04-4	Methyl Tert Butyl Ether	10 U		250	223	89	250	230	92	3	65-119/13
91-20-3	Naphthalene	50 U		250	196	78	250	209	84	6	43-139/28
103-65-1	n-Propylbenzene	10 U		250	228	91	250	231	92	1	72-123/13
100-42-5	Styrene	10 U		250	213	85	250	220	88	3	74-119/19
75-65-0	Tert Butyl Alcohol	200 U		2500	1940	78	2500	1920	77	1	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	10 U		250	218	87	250	223	89	2	74-119/14
71-55-6	1,1,1-Trichloroethane	10 U		250	224	90	250	234	94	4	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	10 U		250	232	93	250	233	93	0	62-121/17
79-00-5	1,1,2-Trichloroethane	10 U		250	227	91	250	230	92	1	70-119/13
87-61-6	1,2,3-Trichlorobenzene	10 U		250	187	75	250	199	80	6	44-144/27
96-18-4	1,2,3-Trichloropropane	10 U		250	204	82	250	196	78	4	61-124/16
120-82-1	1,2,4-Trichlorobenzene	10 U		250	200	80	250	211	84	5	57-132/18
95-63-6	1,2,4-Trimethylbenzene	10 U		250	216	86	250	219	88	1	70-121/15
108-67-8	1,3,5-Trimethylbenzene	10 U		250	226	90	250	231	92	2	66-119/15
127-18-4	Tetrachloroethylene	6.3	J	250	236	92	250	244	95	3	72-132/14
108-88-3	Toluene	10 U		250	230	92	250	234	94	2	73-119/13
79-01-6	Trichloroethylene	10 U		250	230	92	250	239	96	4	73-121/13
75-69-4	Trichlorofluoromethane	10 U		250	261	104	250	264	106	1	46-152/25
75-01-4	Vinyl chloride	558		250	800	97	250	791	93	1	54-126/17
1330-20-7	Xylene (total)	30 U		750	629	84	750	645	86	3	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD14135-2	Limits
1868-53-7	Dibromofluoromethane	102%	103%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	85%	85%	84%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD14135-2MS	E0064804.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2MSD	E0064805.D	10	12/27/17	EM	n/a	n/a	VE2876
TD14135-2	E0064803.D	10	12/27/17	EM	n/a	n/a	VE2876

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5, TD14014-6, TD14014-7, TD14014-8

CAS No.	Surrogate Recoveries	MS	MSD	TD14135-2	Limits
2037-26-5	Toluene-D8	100%	99%	100%	80-119%
460-00-4	4-Bromofluorobenzene	101%	100%	98%	72-126%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS829-MB	SS018859.D	1	12/29/17	SC	n/a	n/a	GSS829

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD14014
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS829-BS	SS018856.D	1	12/29/17	SC	n/a	n/a	GSS829
GSS829-BSD [a]	SS018857.D	1	12/29/17	SC	n/a	n/a	GSS829

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
74-82-8	Methane	21.5	18.2	85	18.9	88	4	68-139/30
74-85-1	Ethene	57.4	49.0	85	50.5	88	3	52-145/30
74-84-0	Ethane	43.3	45.9	106	46.6	108	2	68-131/30

(a) Insufficient sample for MS/MSD. AZ:Q9

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD14014
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP45597/GN86767	0.50	0.0	mg/l	10	10.8	108.0	90-110%
Iron, Ferrous	GN86736	0.10	0.0	mg/l	4.0	4.0	100.0	94-103%
Nitrogen, Nitrate	GP45570/GN86738	0.50	0.0	mg/l	10	11.0	110.0	90-110%
Nitrogen, Nitrite	GP45570/GN86738	0.50	0.0	mg/l	10	10.9	109.0	90-110%
Sulfate	GP45597/GN86767	0.60	0.0	mg/l	10	10.2	102.0	90-110%

Associated Samples:
Batch GN86736: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
Batch GP45570: TD14014-1
Batch GP45597: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD14014
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chloride	GP45597/GN86767	TD14014-1	mg/l	631	592	6.4	0-20%
Fluoride	GP45597/GN86767	TD14014-1	mg/l	0.0	0.0	0.0	0-20%
Iron, Ferrous	GN86736	TD14014-1	mg/l	0.0	0.0	0.0	0-10%
Nitrogen, Nitrate	GP45570/GN86738	TD14014-1	mg/l	15.6	17.0	8.6	0-20%
Nitrogen, Nitrite	GP45570/GN86738	TD14014-1	mg/l	0.0	0.0	0.0	0-20%
Sulfate	GP45597/GN86767	TD14014-1	mg/l	355	335	5.8	0-20%

Associated Samples:
Batch GN86736: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
Batch GP45570: TD14014-1
Batch GP45597: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD14014
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP45597/GN86767	TD14014-1	mg/l	631	500	1230	119.8	80-120%
Fluoride	GP45597/GN86767	TD14014-1	mg/l	0.0	500	553	110.6	80-120%
Iron, Ferrous	GN86736	TD14014-1	mg/l	0.0	4.0	4.1	102.0	89-106%
Nitrogen, Nitrate	GP45570/GN86738	TD14014-1	mg/l	15.6	10	29.9	143.0N(a)	80-120%
Nitrogen, Nitrite	GP45570/GN86738	TD14014-1	mg/l	0.0	10	10.9	109.0	80-130%
Sulfate	GP45597/GN86767	TD14014-1	mg/l	355	500	894	107.8	80-120%

Associated Samples:
Batch GN86736: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
Batch GP45570: TD14014-1
Batch GP45597: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Outside control limits due to matrix interference.

Misc. Forms

Custody Documents and Other Forms

(SGS Orlando, FL)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS ACCUTEST

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD14014

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-121917		12/19/17	9:10:00 AM		AQ	3	3								X	
2	PT-2S-90-121917		12/19/17	10:35:00 AM		AQ	3	3								X	
3	PTLB-7R-90-121917		12/19/17	11:45:00 AM		AQ	3	3								X	
4	ISCO-1-S-85-121917		12/19/17	1:20:00 PM		AQ	3	3								X	
5	ISCO-1-D-98-121917		12/19/17	2:30:00 PM		AQ	3	3								X	

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- ☐ Std. 10 Business Days
- ☐ 5 Day RUSH
- ☐ 3 Day EMERGENCY
- ☐ 2 Day EMERGENCY
- ☐ 1 Day EMERGENCY
- ☒ other Due 12/28/2017

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format
- ☒ Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By: 1	Relinquished By: 2	Date Time:	Received By: 2
	12/22/17	FX	FX	12-22-17	11:30
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal # ☐ Intact ☐ Not Intact	Preserved where applicable ☐	On Ice ☐ Cooler Temp. 3.4

10.1 10

TD14014: Chain of Custody
Page 1 of 2
SGS Orlando, FL

SGS Accutest Sample Receipt Summary

Job Number: TD14014 **Client:** ALGC **Project:** PLYMOUTH

Date / Time Received: 12/22/2017 11:30:00 AM **Delivery Method:** FX **Airbill #'s:** 5642 4621 5868

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (3.4);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: JORGEC Date: 12/22/2017 11:30:00 Reviewer: BR Date: 12/22/2017

10.1 10

TD14014: Chain of Custody
Page 2 of 2

MS Volatiles

QC Data Summaries

(SGS Orlando, FL)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1874-MB	Z49925.D	1	12/26/17	MM	n/a	n/a	VZ1874

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-1, TD14014-2, TD14014-4, TD14014-5

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	102%	74-125%
2037-26-5	Toluene-D8	106%	88-111%

Method Blank Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1875-MB	Z49956.D	1	12/27/17	MM	n/a	n/a	VZ1875

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-3

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	89%	74-125%
2037-26-5	Toluene-D8	104%	88-111%

Blank Spike Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1874-BS	Z49923.D	1	12/26/17	MM	n/a	n/a	VZ1874

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-1, TD14014-2, TD14014-4, TD14014-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.2	91	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	102%	74-125%
2037-26-5	Toluene-D8	103%	88-111%

11.2.1

11

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1875-BS	Z49955.D	1	12/27/17	MM	n/a	n/a	VZ1875

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	18.0	90	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	90%	74-125%
2037-26-5	Toluene-D8	102%	88-111%

11.2.2

11

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA50459-1MS	Z49946.D	1	12/26/17	MM	n/a	n/a	VZ1874
FA50459-1MSD	Z49947.D	1	12/26/17	MM	n/a	n/a	VZ1874
FA50459-1	Z49926.D	1	12/26/17	MM	n/a	n/a	VZ1874

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-1, TD14014-2, TD14014-4, TD14014-5

CAS No.	Compound	FA50459-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	0.82	J	20	18.0	86	20	18.6	89	3	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA50459-1	Limits
17060-07-0	1,2-Dichloroethane-D4	93%	93%	106%	74-125%
2037-26-5	Toluene-D8	99%	102%	103%	88-111%

11.3.1

11

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD14014
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA50371-2MS	Z49966.D	1	12/27/17	MM	n/a	n/a	VZ1875
FA50371-2MSD	Z49967.D	1	12/27/17	MM	n/a	n/a	VZ1875
FA50371-2	Z49959.D	1	12/27/17	MM	n/a	n/a	VZ1875

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD14014-3

CAS No.	Compound	FA50371-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	28.6		20	46.3	89	20	45.8	86	1	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA50371-2	Limits
17060-07-0	1,2-Dichloroethane-D4	87%	90%	90%	74-125%
2037-26-5	Toluene-D8	102%	104%	103%	88-111%

11.3.2

11

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Scott, LA)

Includes the following where applicable:

- Chain of Custody

SGS ACCUTEST

CHAIN OF CUSTODY

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job TD14014

Client / Reporting Information

Company Name: SGS Accutest
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE .NA	LAB USE ONLY
1	PT-3-90-121917		12/19/17	9:10:00 AM		AQ	1			1						X	/
2	PT-2S-90-121917		12/19/17	10:35:00 AM		AQ	1			1						X	/
3	PTLB-7R-90-121917		12/19/17	11:45:00 AM		AQ	1			1						X	/
4	ISCO-1-S-85-121917		12/19/17	1:20:00 PM		AQ	1			1						X	/
5	ISCO-1-D-98-121917		12/19/17	2:30:00 PM		AQ	1			1						X	/

RUSH

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 12/28/2017

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

(3W2)

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 S. James	12-21-17 1800	1 SGS	2 SGS		2 Dilman Allen
3 Dilman Allen	12217 2300	3 [signature] 12-22-17 0700			4
5		5 12-22-17	Custody Seal # (Sun Cooler) ☑ Intact ☐ Not intact	Preserved where applicable ☑	On Ice ☑ Cooler Temp. (2.6 W 4.3°)

12.1

12

TD14014: Chain of Custody
Page 1 of 2
SGS Scott, LA

SGS Accutest Sample Receipt Summary

Job Number: TD14014 **Client:** SGS (TX) **Project:** PLYMOUTH TUBE GW

Date / Time Received: 12/22/2017 7:40:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (2.6/2.6); DV439

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV439;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Comments

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

12.1

12

TD14014: Chain of Custody
Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Scott, LA)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/22/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	10	45		
Antimony	6.0	1.5	3.4		
Arsenic	10	1.5	1.9		
Barium	10	.25	1		
Beryllium	4.0	.04	.2		
Boron	100	1.4	8.3		
Cadmium	5.0	.13	1.3		
Calcium	100	5.9	9.2		
Chromium	10	.35	.2		
Cobalt	10	.15	1.4		
Copper	10	.98	4		
Iron	100	4.3	22	0.20	<100
Lead	10	.79	2.7		
Lithium	10	2	5.2		
Magnesium	100	19	72		
Manganese	10	3.6	.3		
Molybdenum	10	.19	1.1		
Nickel	10	.67	1.8		
Potassium	500	37	140		
Selenium	10	1.7	5.3		
Silver	10	.42	2		
Sodium	500	89	78	-120	<500
Strontium	10	.08	.2		
Thallium	5.0	1.4	4.8		
Tin	10	.51	2.2		
Titanium	10	.34	1.2		
Vanadium	10	.28	.8		
Zinc	20	9.9	.7		

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 12/22/17

Metal	LA39947-2 Original	MS	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron	6580	7560	1000	98.0	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium	6090	16800	10000	107.1	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 12/22/17

Metal	LA39947-2 Original	MSD	Spikelot ICPSPIKE1%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron	6580	7290	1000	71.0 (a)	3.6	20
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium	6090	16100	10000	100.1	4.3	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/22/17

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron	1030	1000	103.0	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	10300	10000	103.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD14014
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10205
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/22/17

Metal	LA39947-2 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron	6580	6080	7.7	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	6090	5180	15.0*(a)	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10205: TD14014-1, TD14014-2, TD14014-3, TD14014-4, TD14014-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference or sample non-homogeneity.

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Haley & Aldrich

Plymouth Tube Groundwater Monitoring - 128159-003

128159-003

SGS Job Number: TD18251

Sampling Date: 03/15/18

Report to:

Haley & Aldrich. Inc.
400 W. Van Buren Street Suite 545
Phoenix, AZ 85004
btravers@haleyaldrich.com; rabrown@haleyaldrich.com

ATTN: Bruce Travers

Total number of pages in report: **122**

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-18-28) AR (14-016-0) AZ (AZ0769) FL (E87628) KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Please share your ideas about
how we can serve you better at:
EHS.US.CustomerCare@sgs.com

Table of Contents

-1-

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **10**
Section 4: Sample Results **12**
4.1: TD18251-1: PT-3-90-031518 13
4.2: TD18251-2: PT-2S-90-031518 20
4.3: TD18251-3: LB-7R-90-031518 27
4.4: TD18251-4: ISCO-1-D-98-031518 34
4.5: TD18251-5: ISCO-1-S-85-031518 41
4.6: TD18251-6: ERB-031518 48
4.7: TD18251-7: ISCO-1-S-85-031518-DUP 51
Section 5: Misc. Forms **54**
5.1: Arizona Qualifiers 55
5.2: Chain of Custody 56
Section 6: MS Volatiles - QC Data Summaries **62**
6.1: Method Blank Summary 63
6.2: Blank Spike Summary 75
6.3: Blank Spike/Blank Spike Duplicate Summary 84
6.4: Matrix Spike/Matrix Spike Duplicate Summary 87
Section 7: GC Volatiles - QC Data Summaries **96**
7.1: Method Blank Summary 97
7.2: Blank Spike/Blank Spike Duplicate Summary 98
Section 8: General Chemistry - QC Data Summaries **99**
8.1: Method Blank and Spike Results Summary 100
8.2: Duplicate Results Summary 101
8.3: Matrix Spike Results Summary 102
Section 9: Misc. Forms (SGS Orlando, FL) **103**
9.1: Chain of Custody 104
Section 10: MS Volatiles - QC Data (SGS Orlando, FL) **107**
10.1: Method Blank Summary 108
10.2: Blank Spike Summary 110
10.3: Matrix Spike/Matrix Spike Duplicate Summary 112
Section 11: Misc. Forms (SGS Scott, LA) **114**
11.1: Chain of Custody 115
Section 12: Metals Analysis - QC Data (SGS Scott, LA) **117**
12.1: Prep QC MP10963: Fe,Na 118

SGS North America Inc.

Sample Summary

Haley & Aldrich

Job No: TD18251

Plymouth Tube Groundwater Monitoring - 128159-003
Project No: 128159-003

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
TD18251-1	03/15/18	08:30		03/16/18	AQ	Ground Water	PT-3-90-031518
TD18251-2	03/15/18	11:20		03/16/18	AQ	Ground Water	PT-2S-90-031518
TD18251-3	03/15/18	12:30		03/16/18	AQ	Ground Water	LB-7R-90-031518
TD18251-4	03/15/18	14:10		03/16/18	AQ	Ground Water	ISCO-1-D-98-031518
TD18251-5	03/15/18	15:25		03/16/18	AQ	Ground Water	ISCO-1-S-85-031518
TD18251-6	03/15/18	13:00		03/16/18	AQ	Ground Water	ERB-031518
TD18251-7	03/15/18	15:30		03/16/18	AQ	Ground Water	ISCO-1-S-85-031518-DUP

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Haley & Aldrich	**Job No**	TD18251
Site:	Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	3/28/2018 10:24:35 A

7 Samples were collected on 03/15/2018 and received intact at SGS North America Inc (SGS) on 03/16/2018 and properly preserved in 1 cooler at 3 Deg C. The samples received an Accutest job number of TD18251. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** F:VZ1926

- All data for batch F:MS39813 was analyzed at SGS North America Inc. - Orlando, FL.

Matrix: AQ **Batch ID:** F:VZ1927

- The following samples were run outside of holding time for method SW846 8260B BY SIM: TD18251-1, TD18251-3, TD18251-4, TD18251-5
- All data for batch F:MS39813 was analyzed at SGS North America Inc. - Orlando, FL.

MS Volatiles By Method SW846 8260C

Matrix: AQ **Batch ID:** VE2938

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- VE2938-BSD: AZ:Q9
- TD18251-6 for 1,1-Dichloroethylene: AZ:V1
- TD18251-6 for Bromoform: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD18251-6 for Acetone: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD18251-6 for Methylene chloride: AZ:V1
- TD18251-6 for Trichlorofluoromethane: AZ:V1
- TD18251-6 for Tert Butyl Alcohol: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
- TD18251-6 for 1,1-Dichloropropene: AZ:V1
- TD18251-6 for 1,2-Dichloroethane-D4: AZ:S4
- TD18251-6 for Chloroethane: AZ:V1
- TD18251-6 for 2-Hexanone: AZ:V1

Matrix: AQ **Batch ID:** VE2944

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD18194-1MS, TD18194-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Methyl ethyl ketone are outside control limits.
- Matrix Spike Recovery(s) for Acetone, Methyl ethyl ketone are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Acetone, Methyl ethyl ketone are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Bromoform are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- TD18251-2 for Methyl ethyl ketone: AZ:V1,L5
- TD18251-2 for Tert Butyl Alcohol: AZ:V1
- VE2944-BS for Methyl ethyl ketone: AZ:L5
- TD18251-2 for Acetone: AZ:V1

Matrix: AQ **Batch ID:** VK2209

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD18251-2MS, TD18251-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Trichloroethylene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for Trichloroethylene are outside control limits. Probable cause due to matrix interference.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- TD18251-2: Sample used for QC purposes only.
- TD18251-4 for Chloroform: AZ:E4
- TD18251-7 for Bromoform: AZ:E4

MS Volatiles By Method SW846 8260C

Matrix: AQ	Batch ID: VK2209

- TD18251-3 for Acetone: AZ:E4
- TD18251-7 for 1,2-Dichloroethane: AZ:E4
- TD18251-5 for Chloroform: AZ:E4
- TD18251-7 for Chloroform: AZ:E4
- TD18251-4 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-5 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-7 for Bromodichloromethane: AZ:E4
- TD18251-5 for 1,1-Dichloroethane: AZ:E4
- TD18251-4 for 1,1-Dichloroethane: AZ:E4
- TD18251-5 for Bromoform: AZ:E4
- TD18251-3 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-7 for Dichlorodifluoromethane: CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9
- TD18251-7 for 1,1-Dichloroethane: AZ:E4

Matrix: AQ	Batch ID: VK2211

- All samples were analyzed within the recommended method holding time.
- Sample(s) TD18111-1MS, TD18111-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-6 have surrogates outside control limits. Probable cause due to matrix interference.
- TD18251-1 for cis-1,2-Dichloroethylene: AZ:E4

GC Volatiles By Method RSKSOP-147/175

Matrix: AQ	Batch ID: GSS839

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- GSS839-BSD: Insufficient sample available for MS/MSD. AZ:Q9

Metals Analysis By Method SW846 6010C

Matrix: AQ	Batch ID: L:MP10963

- All data for batch L:MP10963 was analyzed at SGS North America Inc. - Scott, LA.

General Chemistry By Method EPA 300.0

Matrix: AQ	Batch ID: GP46777

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18060-1DUP, TD18060-1MS were used as the QC samples for Chloride, Sulfate, Chloride.

General Chemistry By Method SM 2320B-2011

Matrix: AQ	Batch ID: GN88569

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP, TD18251-1MS were used as the QC samples for Alkalinity, Total as CaCO3.

General Chemistry By Method SM 3500FE B-2011

Matrix: AQ	Batch ID: GN88487

- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP, TD18251-1MS were used as the QC samples for Iron, Ferrous.
- The following samples were run outside of holding time for method SM 3500FE B-2011: TD18251-1, TD18251-2, TD18251-3 Sample received and analyzed out of holding time.
- TD18251-4 for Iron, Ferrous: Sample received and analyzed out of holding time.
- TD18251-5 for Iron, Ferrous: Sample received and analyzed out of holding time.

General Chemistry By Method SM18 2320B

Matrix: AQ	Batch ID: GN88570

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP were used as the QC samples for Alkalinity, Bicarbonate.

Matrix: AQ	Batch ID: GN88571

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) TD18251-1DUP were used as the QC samples for Alkalinity, Carbonate.

SGS certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS and as stated on the COC. SGS certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Quality Manual except as noted above. This report is to be used in its entirety. SGS is not responsible for any assumptions of data quality if partial data packages are used.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	SGS Houston, TX	**Job No**	TD18251
Site:	HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003	**Report Date**	3/23/2018 12:15:58 P

5 samples, 0 trip blanks and 0 field blanks were collected on 03/15/2018 and were received intact at Accutest on 03/16/2018, properly preserved and cool at 1.6 Deg C. These Samples received an Accutest job number of TD18251. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP10963

- Sample(s) LA42290-1MS, LA42290-1MSD, LA42290-1SDL were used as the QC samples for metals.
- Matrix Spike Duplicate Recovery(s) for Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- TD18251-5 for Sodium: AZ:D2
- TD18251-4 for Sodium: AZ:D2
- TD18251-3 for Sodium: AZ:D2
- TD18251-2 for Sodium: AZ:D2
- TD18251-1 for Sodium: AZ:D2

Accutest Laboratories Gulf Coast – LA (ALGC-LA) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SGS Houston, TX **Job No:** TD18251

Site: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003 **Report Date** 3/27/2018 6:08:58 PM

5 Samples were collected on 03/15/2018 and were received at SGS North America Inc - Orlando on 03/17/2018 properly preserved, at 2.8 Deg. C and intact. These Samples received an SGS Orlando job number of TD18251. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

MS Volatiles By Method SW846 8260B BY SIM

Matrix: AQ **Batch ID:** VZ1926

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) TD18246-1MS, TD18246-1MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike.

RPD(s) for MSD for 1,4-Dioxane are outside control limits for sample TD18246-1MSD. Probable cause is due to sample non-homogeneity. AZ:R9

Matrix: AQ **Batch ID:** VZ1927

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA52696-3MS, FA52696-3MSD were used as the QC samples indicated.

Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane are outside control limits. Probable cause is due to matrix interference. For method performance in a clean matrix, refer to Blank Spike.

TD18251-1: Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1

TD18251-4: Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1

SGS Orlando certifies that this report meets the project requirements for analytical data produced for the samples as received at SGS Orlando and as stated on the COC. SGS Orlando certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the SGS Orlando Quality Manual except as noted above. This report is to be used in its entirety. SGS Orlando is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Date: March 27, 2018

Lovelie Metzgar, QA Officer (signature on file)

Summary of Hits

Job Number: TD18251
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 03/15/18

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TD18251-1	**PT-3-90-031518**					
1,4-Dioxane [a]		6.6	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		20.6	1.0	0.30	ug/l	SW846 8260C
cis-1,2-Dichloroethylene [b]		0.39 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		172	1.0	0.30	ug/l	SW846 8260C
Iron [c]		127	100		ug/l	SW846 6010C
Sodium [d]		502000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		285	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		285	5.0		mg/l	SM 2320B-2011
Chloride		621	25		mg/l	EPA 300.0
Sulfate		380	25		mg/l	EPA 300.0
TD18251-2	**PT-2S-90-031518**					
1,4-Dioxane [e]		42.2	1.0	0.30	ug/l	SW846 8260B BY SIM
1,1-Dichloroethylene		104	5.0	1.5	ug/l	SW846 8260C
Trichloroethylene		645	5.0	1.5	ug/l	SW846 8260C
Sodium [d]		524000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		260	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		260	5.0		mg/l	SM 2320B-2011
Chloride		723	25		mg/l	EPA 300.0
Sulfate		394	25		mg/l	EPA 300.0
TD18251-3	**LB-7R-90-031518**					
1,4-Dioxane [e]		3.3	1.0	0.30	ug/l	SW846 8260B BY SIM
Acetone [b]		20.5 J	50	10	ug/l	SW846 8260C
Bromoform		1.4	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		7.0	1.0	0.30	ug/l	SW846 8260C
Sodium [d]		1350000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		16.0	5.0		mg/l	SM18 2320B
Alkalinity, Carbonate		299	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		415	5.0		mg/l	SM 2320B-2011
Chloride		683	50		mg/l	EPA 300.0
Sulfate		1050	50		mg/l	EPA 300.0
TD18251-4	**ISCO-1-D-98-031518**					
1,4-Dioxane [a]		5.7	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform		1.2	1.0	0.30	ug/l	SW846 8260C
Chloroform [b]		0.42 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [b]		0.44 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		17.9	1.0	0.30	ug/l	SW846 8260C
Iron [c]		1460	100		ug/l	SW846 6010C

Summary of Hits

Job Number: TD18251
Account: Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003
Collected: 03/15/18

3

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Sodium [d]		1510000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		55.0	5.0		mg/l	SM18 2320B
Alkalinity, Carbonate		460	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		560	5.0		mg/l	SM 2320B-2011
Chloride		670	50		mg/l	EPA 300.0
Sulfate		1430	50		mg/l	EPA 300.0
TD18251-5	**ISCO-1-S-85-031518**					
1,4-Dioxane [e]		22.4	1.0	0.30	ug/l	SW846 8260B BY SIM
Bromoform [b]		0.61 J	1.0	0.30	ug/l	SW846 8260C
Chloroform [b]		0.46 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [b]		0.48 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		164	1.0	0.30	ug/l	SW846 8260C
Iron [c]		357	100		ug/l	SW846 6010C
Sodium [d]		1000000	2500		ug/l	SW846 6010C
Alkalinity, Bicarbonate		173	5.0		mg/l	SM18 2320B
Alkalinity, Carbonate		196	5.0		mg/l	SM18 2320B
Alkalinity, Total as CaCO3		375	5.0		mg/l	SM 2320B-2011
Chloride		666	50		mg/l	EPA 300.0
Sulfate		784	50		mg/l	EPA 300.0
TD18251-6	**ERB-031518**					
No hits reported in this sample.						
TD18251-7	**ISCO-1-S-85-031518-DUP**					
Bromodichloromethane [b]		0.40 J	1.0	0.30	ug/l	SW846 8260C
Bromoform [b]		0.56 J	1.0	0.30	ug/l	SW846 8260C
Chloroform [b]		0.50 J	1.0	0.30	ug/l	SW846 8260C
1,1-Dichloroethane [b]		0.56 J	1.0	0.30	ug/l	SW846 8260C
1,2-Dichloroethane [b]		0.34 J	1.0	0.30	ug/l	SW846 8260C
Trichloroethylene		160	1.0	0.30	ug/l	SW846 8260C

(a) Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1 Analysis performed at SGS Orlando, FL.
(b) AZ:E4
(c) Analysis performed at SGS Scott, LA. Cert# AZ0805
(d) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805
(e) Analysis performed at SGS Orlando, FL.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359271.D	1	03/23/18 13:19	FI	n/a	n/a	VK2211
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	20.6	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene [a]	0.39	1.0	0.30	ug/l	J
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	172	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		72-122%
17060-07-0	1,2-Dichloroethane-D4	108%		68-124%
2037-26-5	Toluene-D8	98%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) AZ:E4

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51202.D	1	03/26/18 14:54	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	6.6	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	100%		74-125%
2037-26-5	Toluene-D8	108%		88-111%

(a) Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1
Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019063.D	1	03/26/18 15:36	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	127	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	502000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-3-90-031518		
Lab Sample ID:	TD18251-1	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	285	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	285	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	621	25	mg/l	50	03/20/18 18:27	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	380	25	mg/l	50	03/20/18 18:27	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0066339.D	5	03/26/18 12:18	FI	n/a	n/a	VE2944
Run #2 [a]	K359218.D	10	03/22/18 15:44	FI	n/a	n/a	VK2209

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	250	50	ug/l	
71-43-2	Benzene	ND	5.0	1.5	ug/l	
108-86-1	Bromobenzene	ND	5.0	1.5	ug/l	
74-97-5	Bromochloromethane	ND	5.0	1.5	ug/l	
75-27-4	Bromodichloromethane	ND	5.0	1.5	ug/l	
75-25-2	Bromoform	ND	5.0	1.5	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	1.5	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	1.5	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	1.5	ug/l	
108-90-7	Chlorobenzene	ND	5.0	1.5	ug/l	
75-00-3	Chloroethane	ND	5.0	1.7	ug/l	
67-66-3	Chloroform	ND	5.0	1.5	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	1.5	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	1.5	ug/l	
75-15-0	Carbon disulfide	ND	25	3.7	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	2.7	ug/l	
75-34-3	1,1-Dichloroethane	ND	5.0	1.5	ug/l	
75-35-4	1,1-Dichloroethylene	104	5.0	1.5	ug/l	
563-58-6	1,1-Dichloropropene	ND	5.0	1.5	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	10	1.7	ug/l	
106-93-4	1,2-Dibromoethane	ND	5.0	1.5	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	1.5	ug/l	
78-87-5	1,2-Dichloropropane	ND	5.0	1.5	ug/l	
142-28-9	1,3-Dichloropropane	ND	5.0	1.5	ug/l	
594-20-7	2,2-Dichloropropane	ND	5.0	1.5	ug/l	
124-48-1	Dibromochloromethane	ND	5.0	1.5	ug/l	
75-71-8	Dichlorodifluoromethane	ND	10	2.5	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.5	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.5	ug/l	
541-73-1	m-Dichlorobenzene	ND	5.0	1.5	ug/l	
95-50-1	o-Dichlorobenzene	ND	5.0	1.5	ug/l	
106-46-7	p-Dichlorobenzene	ND	5.0	1.5	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.5	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.5	ug/l	
100-41-4	Ethylbenzene	ND	5.0	1.5	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	5.0	1.5	ug/l	
591-78-6	2-Hexanone	ND	50	5.8	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	1.5	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	1.5	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	50	12	ug/l	
74-83-9	Methyl bromide	ND	5.0	2.4	ug/l	
74-87-3	Methyl chloride	ND	5.0	1.5	ug/l	
74-95-3	Methylene bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	25	6.3	ug/l	
78-93-3	Methyl ethyl ketone [c]	ND	50	13	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	5.0	1.5	ug/l	
91-20-3	Naphthalene	ND	25	2.5	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	1.5	ug/l	
100-42-5	Styrene	ND	5.0	1.5	ug/l	
75-65-0	Tert Butyl Alcohol [b]	ND	100	15	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	5.0	1.5	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.5	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.5	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.5	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.5	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	5.0	1.9	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.5	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	1.5	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	1.5	ug/l	
127-18-4	Tetrachloroethylene	ND	5.0	1.5	ug/l	
108-88-3	Toluene	ND	5.0	1.5	ug/l	
79-01-6	Trichloroethylene	645	5.0	1.5	ug/l	
75-69-4	Trichlorofluoromethane	ND	5.0	1.5	ug/l	
75-01-4	Vinyl chloride	ND	5.0	1.5	ug/l	
1330-20-7	Xylene (total)	ND	15	3.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%	96%	72-122%
17060-07-0	1,2-Dichloroethane-D4	101%	106%	68-124%
2037-26-5	Toluene-D8	102%	98%	80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%	98%	72-126%

(a) Sample used for QC purposes only.
(b) AZ:V1
(c) AZ:V1,L5

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51169.D	1	03/23/18 12:52	AFL	n/a	n/a	F:VZ1926
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	42.2	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	95%		74-125%
2037-26-5	Toluene-D8	108%		88-111%

(a) Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019064.D	1	03/26/18 15:50	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	524000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	PT-2S-90-031518		
Lab Sample ID:	TD18251-2	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	260	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	260	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	723	25	mg/l	50	03/20/18 19:15	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	394	25	mg/l	50	03/20/18 19:15	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359212.D	1	03/22/18 13:23	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	20.5	50	10	ug/l	J
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	1.4	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	7.0	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	93%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51200.D	1	03/26/18 14:11	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	3.3	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		74-125%
2037-26-5	Toluene-D8	95%		88-111%

(a) Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019065.D	1	03/26/18 16:12	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	< 100	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	1350000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	LB-7R-90-031518		
Lab Sample ID:	TD18251-3	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	16.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	299	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	415	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	683	50	mg/l	100	03/20/18 19:31	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	1050	50	mg/l	100	03/20/18 19:31	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359213.D	1	03/22/18 13:47	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	1.2	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.42	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.44	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	17.9	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	88%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51199.D	1	03/26/18 13:49	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	5.7	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	98%		74-125%
2037-26-5	Toluene-D8	102%		88-111%

(a) Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values. AZ:N1
Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019066.D	1	03/26/18 16:26	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	1460	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	1510000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-D-98-031518		
Lab Sample ID:	TD18251-4	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	55.0	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	460	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	560	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	670	50	mg/l	100	03/20/18 19:47	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	1430	50	mg/l	100	03/20/18 19:47	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359214.D	1	03/22/18 14:10	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	0.61	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.46	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.48	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	164	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	88%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260B BY SIM	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z51201.D	1	03/26/18 14:32	AFL	n/a	n/a	F:VZ1927
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	22.4	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
17060-07-0	1,2-Dichloroethane-D4	99%		74-125%
2037-26-5	Toluene-D8	101%		88-111%

(a) Analysis performed at SGS Orlando, FL.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	SS019067.D	1	03/26/18 16:44	SC	n/a	n/a	GSS839
Run #2							

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	38.0 ml	5.0 ml	500 ul	22.1 Deg. C
Run #2				

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron [a]	357	100	ug/l	1	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]
Sodium [b]	1000000	2500	ug/l	5	03/19/18	03/20/18	ALA	SW846 6010C [1]	SW846 3010A [2]

(1) Instrument QC Batch: L:MA11328
(2) Prep QC Batch: L:MP10963

(a) Analysis performed at SGS Scott, LA. Cert# AZ0805
(b) AZ:D2 Analysis performed at SGS Scott, LA. Cert# AZ0805

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518		
Lab Sample ID:	TD18251-5	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
		Percent Solids:	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	173	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Carbonate	196	5.0	mg/l	1	03/20/18 10:45	PA	SM18 2320B
Alkalinity, Total as CaCO3	375	5.0	mg/l	1	03/20/18 10:45	PA	SM 2320B-2011
Chloride	666	50	mg/l	100	03/20/18 20:03	LR	EPA 300.0
Iron, Ferrous [a]	< 0.10	0.10	mg/l	1	03/16/18 13:30	PA	SM 3500FE B-2011
Sulfate	784	50	mg/l	100	03/20/18 20:03	LR	EPA 300.0

(a) Sample received and analyzed out of holding time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	ERB-031518		
Lab Sample ID:	TD18251-6	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	E0066201.D	1	03/19/18 23:22	FI	n/a	n/a	VE2938
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene [b]	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene [b]	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-031518		
Lab Sample ID:	TD18251-6	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone [b]	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride [b]	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol [a]	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		72-122%
17060-07-0	1,2-Dichloroethane-D4	125% [c]		68-124%
2037-26-5	Toluene-D8	105%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ERB-031518		
Lab Sample ID:	TD18251-6	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	107%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:V9,N1
(b) AZ:V1
(c) AZ:S4

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518-DUP		
Lab Sample ID:	TD18251-7	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K359215.D	1	03/22/18 14:33	FI	n/a	n/a	VK2209
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane [a]	0.40	1.0	0.30	ug/l	J
75-25-2	Bromoform [a]	0.56	1.0	0.30	ug/l	J
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform [a]	0.50	1.0	0.30	ug/l	J
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane [a]	0.56	1.0	0.30	ug/l	J
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane [a]	0.34	1.0	0.30	ug/l	J
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518-DUP		
Lab Sample ID:	TD18251-7	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Compound	Result	RL	MDL	Units	Q
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	160	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	88%		80-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	ISCO-1-S-85-031518-DUP		
Lab Sample ID:	TD18251-7	**Date Sampled:**	03/15/18
Matrix:	AQ - Ground Water	**Date Received:**	03/16/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Plymouth Tube Groundwater Monitoring - 128159-003		

VOA 8260 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) AZ:E4
(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1,V9

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D2	Sample required dilution due to high concentration of target analyte.
E4	Concentration estimated. Analyte was detected below laboratory minimum reporting limit (MRL) but above MDL.
L5	The associated blank spike recovery was above laboratory/method acceptance limits. This analyte was not detected in the sample.
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
S4	Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.
V9	CCV recovery was below method acceptance limits.

1 of 1

SGS

PHOENIX ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking # 7801 0038 7845
Bottle Order Control #
SGS Accutest Quote #
SGS Accutest NC Job # TD18251

Client / Reporting Information

Company Name: HALEY + ALDRICH
Address: 400 E VAN BUREN ST #545
City: PHOENIX State: AZ Zip: 85004
Project Contact: BRUCE TRAVERS
Phone #: 480-244-5891
Samplers's Name: KFORD / S.HENSEL.

Project Information

Project Name: PLYMOUTH TUBE
Street: W. WILLIS
City: CHANDLER State: AZ
Project #: 128159-003
EMAIL:
Client Purchase Order #

Requested Analysis

SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	NaHSO4	MEOH	ENCORE	8260B	8260 SIM (1,4 Dioxane)	EPA 300 - SULFATE	SW846 6010/6020 TOTAL IRON	6010/6020 FERROUS IRON FIELD FILTERED 48 hrs	RSK 175 Methane Ethane, Ethene	2320B - Alkalinity	EPA 300 - Chloride	6010/6020 - Sodium		
1	PT-3-90-031518	3/15/18	0830	KF/SH	GW	11	8		1		2				X	X	X	X	X	X	X	X	X		
2	PT-25-90-031518	↓	1120	↓	GW	11	8		1		2				X	X	X	X	X	X	X	X	X		
3	LB-7R-90-031518	↓	1230	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X		
4	ISCO-1-D-98-031518	↓	1410	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X		
5	ISCO-1-S-85-031518	↓	1525	↓	↓	11	8		1		2				X	X	X	X	X	X	X	X	X		
6	ERB-031518	↓	1300	↓	↓	3	3								X										
7	ISCO-1-S-85-031518-DUP	↓	1530	↓	↓	3	3								X										
	TRIP BLANK														X										

Matrix Codes: WW- Wastewater; GW- Ground Water; SW- Surface Water; SO- Soil; OI-Oil; WP-Wipe; LIQ - Non-aqueous Liquid; AIR; DW- Drinking Water (Perchlorate Only)

LAB USE ONLY

TAGGED BY:

Turnaround Time (Business days)

- 10 Day
- 5 Day
- 3 Day
- 2 Day
- 1 Day
- Same Day

Approved By:/ Date:

Std

Emergency T/A data available VIA Lablink

Data Deliverable Information

- Commercial "A" - Results only
- Commercial "B" - Results with QC summaries
- Commerical "B+" - Results, QC, and chromatograms
- FULT1 - Level 4 data package
- EDF for Geotracker — EDD Format
- Provide EDF Global ID
- Provide EDF Logcode:

Comments / Remarks

VERIFIED BY: EL

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3-15-18 1700	1	2	3/15/18 1745	2 fed Ex
Relinquished by: FedEx	Date Time:	Received By: 1100 3/16/18	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Appropriate Bottle / Pres. Y / N	Headspace Y / N
5		5		Labels match Coc? Y / N	Separate Receiving Check List used: Y / N

On Ice Y / N — Cooler Temp. 3.0 oC

5.2 5

SGS ACCUTEST

COOLER TEMP FORM

TC# TD18251

Delivered by (circle one): FedEx/UPS ALGC Driver Client

Date: 3-16-18

Client: Hulings Aldrich

Cooler Number:

Thermometer ID: IR4 CF, °C 0.0 Corrected Temp, °C 3.0

SAMPLES CONTAINED IN COOLER

(1) 1LLNP
(1) 250 NP
(1) 250 SUB
(6) VOA
(2) 4oz

TRK# 0201 7801 0038 7845

AB SGF

3/16

Form: SM027-06 Rev 10/24/2016

5.2 5

TD18251: Chain of Custody
Page 2 of 6

SGS Sample Receipt Summary

Job Number: TD18251 **Client:** HALEY AND ALDRICH **Project:** PLYMOUTH TUBE

Date / Time Received: **Delivery Method:** **Airbill #'s:** 780100387845

No. Coolers: 1 **Therm ID:** IR-4; **Temp Adjustment Factor:** 0;

Cooler Temps (Initial/Adjusted): #1: (3/3);

Cooler Security	Y	or N		Y	or N
1. Custody Seals Present:	☑	☐	3. COC Present:	☑	☐
2. Custody Seals Intact:	☑	☐	4. Smpl Dates/Time OK	☑	☐

Cooler Temperature	Y	or N
1. Temp criteria achieved:	☑	☐
2. Cooler temp verification:		
3. Cooler media:	Ice (Bag)	

Quality Control Preservation	Y	or N	N/A	WTB	STB
1. Trip Blank present / cooler:	☐	☑	☐	☐	☐
2. Trip Blank listed on COC:	☑	☐	☐		
3. Samples preserved properly:	☑	☐			
4. VOCs headspace free:	☑	☐	☐		

Sample Integrity - Documentation	Y	or N
1. Sample labels present on bottles:	☑	☐
2. Container labeling complete:	☑	☐
3. Sample container label / COC agree:	☑	☐

Sample Integrity - Condition	Y	or N
1. Sample recvd within HT:	☐	☑
2. All containers accounted for:	☑	☐
3. Condition of sample:	Intact	

Sample Integrity - Instructions	Y	or N	N/A
1. Analysis requested is clear:	☑	☐	
2. Bottles received for unspecified tests	☐	☑	
3. Sufficient volume recvd for analysis:	☑	☐	
4. Compositing instructions clear:	☐	☐	☑
5. Filtering instructions clear:	☐	☐	☑

Comments No tripblanks received.
Feeros Iron received out of hold time, proceed per PM(AP)

Sample Receipt Log

Job #: TD18251 **Date / Time Received:** 3/16/2018 11:00:00 AM **Initials:** DS

Client: HALEY AND ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD18251-1	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-1	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-1	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-1	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-2	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-2	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-2	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-2	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3

Sample Receipt Log

Job #: TD18251 **Date / Time Received:** 3/16/2018 11:00:00 AM **Initials:** DS

Client: HALEY AND ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD18251-3	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-3	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-3	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-3	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-4	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-4	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-4	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-4	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	1000ml	1	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3
1	TD18251-5	250ml	2	3O	N/P	Note #2 - Preservative check not applicable.	IR-4	3	0	3

Sample Receipt Log

Job #: TD18251 **Date / Time Received:** 3/16/2018 11:00:00 AM **Initials:** DS

Client: HALEY AND ALDRICH

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD18251-5	250ml	3	SUB	HNO3	pH < 2	IR-4	3	0	3
1	TD18251-5	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	10	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
1	TD18251-5	40ml	11	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	3	0	3
	TD18251-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD18251-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-MB	E0066195.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-MB	E0066195.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	121%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-MB	E0066195.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	104%	80-119%
460-00-4	4-Bromofluorobenzene	105%	72-126%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-MB	K359208.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-MB	K359208.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	95%	72-122%
17060-07-0	1,2-Dichloroethane-D4	105%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-MB	K359208.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-MB	K359267.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-MB	K359267.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	0.48	1.0	0.40	ug/l	J
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-MB	K359267.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-MB	E0066332.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	10	ug/l	
71-43-2	Benzene	ND	1.0	0.30	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.30	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.30	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.30	ug/l	
104-51-8	n-Butylbenzene	ND	1.0	0.30	ug/l	
135-98-8	sec-Butylbenzene	ND	1.0	0.30	ug/l	
98-06-6	tert-Butylbenzene	ND	1.0	0.30	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.33	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
95-49-8	o-Chlorotoluene	ND	1.0	0.30	ug/l	
106-43-4	p-Chlorotoluene	ND	1.0	0.30	ug/l	
75-15-0	Carbon disulfide	ND	5.0	0.75	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.54	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.30	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.30	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.33	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.30	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.30	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.30	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.51	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.31	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.30	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/l	
637-92-3	Ethyl tert-Butyl Ether	ND	1.0	0.30	ug/l	

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-MB	E0066332.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Result	RL	MDL	Units	Q
591-78-6	2-Hexanone	ND	10	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.40	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.30	ug/l	
99-87-6	p-Isopropyltoluene	ND	1.0	0.30	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	10	2.3	ug/l	
74-83-9	Methyl bromide	ND	1.0	0.49	ug/l	
74-87-3	Methyl chloride	ND	1.0	0.30	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.30	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.3	ug/l	
78-93-3	Methyl ethyl ketone	ND	10	2.6	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.30	ug/l	
91-20-3	Naphthalene	ND	5.0	0.50	ug/l	
103-65-1	n-Propylbenzene	ND	1.0	0.30	ug/l	
100-42-5	Styrene	ND	1.0	0.30	ug/l	
75-65-0	Tert Butyl Alcohol	ND	20	3.0	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.30	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.30	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.30	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	1.0	0.38	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.30	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	0.30	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.30	ug/l	
108-88-3	Toluene	ND	1.0	0.30	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	
1330-20-7	Xylene (total)	ND	3.0	0.65	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	97%	68-124%

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-MB	E0066332.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	101%	80-119%
460-00-4	4-Bromofluorobenzene	99%	72-126%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-BS	K359205.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	126	101	46-129
71-43-2	Benzene	25	23.5	94	68-119
108-86-1	Bromobenzene	25	21.9	88	71-119
74-97-5	Bromochloromethane	25	24.6	98	71-118
75-27-4	Bromodichloromethane	25	25.4	102	72-118
75-25-2	Bromoform	25	20.9	84	54-123
104-51-8	n-Butylbenzene	25	23.3	93	66-123
135-98-8	sec-Butylbenzene	25	22.9	92	72-123
98-06-6	tert-Butylbenzene	25	22.4	90	70-124
108-90-7	Chlorobenzene	25	22.6	90	74-120
75-00-3	Chloroethane	25	23.2	93	61-132
67-66-3	Chloroform	25	23.5	94	73-122
95-49-8	o-Chlorotoluene	25	22.3	89	71-122
106-43-4	p-Chlorotoluene	25	22.6	90	73-120
75-15-0	Carbon disulfide	25	27.6	110	55-140
56-23-5	Carbon tetrachloride	25	25.8	103	68-133
75-34-3	1,1-Dichloroethane	25	24.4	98	72-121
75-35-4	1,1-Dichloroethylene	25	25.3	101	67-140
563-58-6	1,1-Dichloropropene	25	25.6	102	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	24.7	99	47-133
106-93-4	1,2-Dibromoethane	25	23.0	92	69-121
107-06-2	1,2-Dichloroethane	25	24.5	98	68-121
78-87-5	1,2-Dichloropropane	25	23.3	93	72-116
142-28-9	1,3-Dichloropropane	25	21.8	87	70-118
594-20-7	2,2-Dichloropropane	25	27.7	111	57-141
124-48-1	Dibromochloromethane	25	25.4	102	68-119
75-71-8	Dichlorodifluoromethane	25	22.9	92	29-182
156-59-2	cis-1,2-Dichloroethylene	25	23.6	94	72-117
10061-01-5	cis-1,3-Dichloropropene	25	23.2	93	71-118
541-73-1	m-Dichlorobenzene	25	22.4	90	73-117
95-50-1	o-Dichlorobenzene	25	21.9	88	71-117
106-46-7	p-Dichlorobenzene	25	21.5	86	71-116
156-60-5	trans-1,2-Dichloroethylene	25	24.5	98	68-124
10061-02-6	trans-1,3-Dichloropropene	25	23.9	96	72-127
100-41-4	Ethylbenzene	25	23.2	93	71-117
637-92-3	Ethyl tert-Butyl Ether	25	21.7	87	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-BS	K359205.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	109	87	49-124
87-68-3	Hexachlorobutadiene	25	22.7	91	62-143
98-82-8	Isopropylbenzene	25	23.2	93	74-141
99-87-6	p-Isopropyltoluene	25	23.0	92	72-126
108-10-1	4-Methyl-2-pentanone	125	111	89	54-122
74-83-9	Methyl bromide	25	26.5	106	53-138
74-87-3	Methyl chloride	25	22.7	91	50-145
74-95-3	Methylene bromide	25	24.1	96	71-117
75-09-2	Methylene chloride	25	22.9	92	60-125
78-93-3	Methyl ethyl ketone	125	110	88	51-129
1634-04-4	Methyl Tert Butyl Ether	25	23.1	92	65-119
91-20-3	Naphthalene	25	21.6	86	43-139
103-65-1	n-Propylbenzene	25	22.4	90	72-123
100-42-5	Styrene	25	23.4	94	74-119
75-65-0	Tert Butyl Alcohol	250	226	90	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	24.4	98	74-119
71-55-6	1,1,1-Trichloroethane	25	26.1	104	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	22.9	92	62-121
79-00-5	1,1,2-Trichloroethane	25	22.9	92	70-119
87-61-6	1,2,3-Trichlorobenzene	25	21.9	88	44-144
96-18-4	1,2,3-Trichloropropane	25	22.1	88	61-124
120-82-1	1,2,4-Trichlorobenzene	25	22.1	88	57-132
95-63-6	1,2,4-Trimethylbenzene	25	21.9	88	70-121
108-67-8	1,3,5-Trimethylbenzene	25	23.1	92	66-119
127-18-4	Tetrachloroethylene	25	23.4	94	72-132
108-88-3	Toluene	25	22.7	91	73-119
79-01-6	Trichloroethylene	25	23.5	94	73-121
75-69-4	Trichlorofluoromethane	25	25.7	103	46-152
75-01-4	Vinyl chloride	25	21.8	87	54-126
1330-20-7	Xylene (total)	75	68.9	92	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	103%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2209-BS	K359205.D	1	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	98%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-BS	K359268.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	127	102	46-129
71-43-2	Benzene	25	23.5	94	68-119
108-86-1	Bromobenzene	25	21.6	86	71-119
74-97-5	Bromochloromethane	25	24.0	96	71-118
75-27-4	Bromodichloromethane	25	25.0	100	72-118
75-25-2	Bromoform	25	19.5	78	54-123
104-51-8	n-Butylbenzene	25	23.6	94	66-123
135-98-8	sec-Butylbenzene	25	22.6	90	72-123
98-06-6	tert-Butylbenzene	25	22.4	90	70-124
108-90-7	Chlorobenzene	25	22.8	91	74-120
75-00-3	Chloroethane	25	24.7	99	61-132
67-66-3	Chloroform	25	23.2	93	73-122
95-49-8	o-Chlorotoluene	25	21.8	87	71-122
106-43-4	p-Chlorotoluene	25	22.6	90	73-120
75-15-0	Carbon disulfide	25	24.7	99	55-140
56-23-5	Carbon tetrachloride	25	25.9	104	68-133
75-34-3	1,1-Dichloroethane	25	23.7	95	72-121
75-35-4	1,1-Dichloroethylene	25	25.0	100	67-140
563-58-6	1,1-Dichloropropene	25	25.8	103	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	23.5	94	47-133
106-93-4	1,2-Dibromoethane	25	23.2	93	69-121
107-06-2	1,2-Dichloroethane	25	25.3	101	68-121
78-87-5	1,2-Dichloropropane	25	22.9	92	72-116
142-28-9	1,3-Dichloropropane	25	22.0	88	70-118
594-20-7	2,2-Dichloropropane	25	26.0	104	57-141
124-48-1	Dibromochloromethane	25	24.6	98	68-119
75-71-8	Dichlorodifluoromethane	25	27.1	108	29-182
156-59-2	cis-1,2-Dichloroethylene	25	22.6	90	72-117
10061-01-5	cis-1,3-Dichloropropene	25	22.9	92	71-118
541-73-1	m-Dichlorobenzene	25	22.4	90	73-117
95-50-1	o-Dichlorobenzene	25	21.7	87	71-117
106-46-7	p-Dichlorobenzene	25	21.3	85	71-116
156-60-5	trans-1,2-Dichloroethylene	25	23.6	94	68-124
10061-02-6	trans-1,3-Dichloropropene	25	23.8	95	72-127
100-41-4	Ethylbenzene	25	23.1	92	71-117
637-92-3	Ethyl tert-Butyl Ether	25	21.3	85	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-BS	K359268.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	112	90	49-124
87-68-3	Hexachlorobutadiene	25	24.0	96	62-143
98-82-8	Isopropylbenzene	25	22.8	91	74-141
99-87-6	p-Isopropyltoluene	25	23.1	92	72-126
108-10-1	4-Methyl-2-pentanone	125	112	90	54-122
74-83-9	Methyl bromide	25	28.8	115	53-138
74-87-3	Methyl chloride	25	22.6	90	50-145
74-95-3	Methylene bromide	25	24.4	98	71-117
75-09-2	Methylene chloride	25	22.1	88	60-125
78-93-3	Methyl ethyl ketone	125	121	97	51-129
1634-04-4	Methyl Tert Butyl Ether	25	23.0	92	65-119
91-20-3	Naphthalene	25	21.1	84	43-139
103-65-1	n-Propylbenzene	25	22.0	88	72-123
100-42-5	Styrene	25	23.2	93	74-119
75-65-0	Tert Butyl Alcohol	250	213	85	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	23.9	96	74-119
71-55-6	1,1,1-Trichloroethane	25	25.6	102	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	22.4	90	62-121
79-00-5	1,1,2-Trichloroethane	25	23.3	93	70-119
87-61-6	1,2,3-Trichlorobenzene	25	22.1	88	44-144
96-18-4	1,2,3-Trichloropropane	25	21.9	88	61-124
120-82-1	1,2,4-Trichlorobenzene	25	22.2	89	57-132
95-63-6	1,2,4-Trimethylbenzene	25	22.0	88	70-121
108-67-8	1,3,5-Trimethylbenzene	25	22.7	91	66-119
127-18-4	Tetrachloroethylene	25	23.9	96	72-132
108-88-3	Toluene	25	22.6	90	73-119
79-01-6	Trichloroethylene	25	23.8	95	73-121
75-69-4	Trichlorofluoromethane	25	28.9	116	46-152
75-01-4	Vinyl chloride	25	22.5	90	54-126
1330-20-7	Xylene (total)	75	69.1	92	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	95%	72-122%
17060-07-0	1,2-Dichloroethane-D4	107%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2211-BS	K359268.D	1	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	98%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-BS	E0066329.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	125	153	122	46-129
71-43-2	Benzene	25	23.8	95	68-119
108-86-1	Bromobenzene	25	23.8	95	71-119
74-97-5	Bromochloromethane	25	24.0	96	71-118
75-27-4	Bromodichloromethane	25	25.2	101	72-118
75-25-2	Bromoform	25	22.6	90	54-123
104-51-8	n-Butylbenzene	25	25.7	103	66-123
135-98-8	sec-Butylbenzene	25	26.6	106	72-123
98-06-6	tert-Butylbenzene	25	24.9	100	70-124
108-90-7	Chlorobenzene	25	23.4	94	74-120
75-00-3	Chloroethane	25	25.2	101	61-132
67-66-3	Chloroform	25	23.4	94	73-122
95-49-8	o-Chlorotoluene	25	23.7	95	71-122
106-43-4	p-Chlorotoluene	25	24.3	97	73-120
75-15-0	Carbon disulfide	25	30.1	120	55-140
56-23-5	Carbon tetrachloride	25	26.3	105	68-133
75-34-3	1,1-Dichloroethane	25	25.5	102	72-121
75-35-4	1,1-Dichloroethylene	25	25.5	102	67-140
563-58-6	1,1-Dichloropropene	25	24.0	96	73-130
96-12-8	1,2-Dibromo-3-chloropropane	25	26.5	106	47-133
106-93-4	1,2-Dibromoethane	25	23.8	95	69-121
107-06-2	1,2-Dichloroethane	25	21.4	86	68-121
78-87-5	1,2-Dichloropropane	25	24.4	98	72-116
142-28-9	1,3-Dichloropropane	25	22.4	90	70-118
594-20-7	2,2-Dichloropropane	25	27.2	109	57-141
124-48-1	Dibromochloromethane	25	26.0	104	68-119
75-71-8	Dichlorodifluoromethane	25	26.5	106	29-182
156-59-2	cis-1,2-Dichloroethylene	25	24.6	98	72-117
10061-01-5	cis-1,3-Dichloropropene	25	25.0	100	71-118
541-73-1	m-Dichlorobenzene	25	24.0	96	73-117
95-50-1	o-Dichlorobenzene	25	22.9	92	71-117
106-46-7	p-Dichlorobenzene	25	22.6	90	71-116
156-60-5	trans-1,2-Dichloroethylene	25	24.9	100	68-124
10061-02-6	trans-1,3-Dichloropropene	25	26.7	107	72-127
100-41-4	Ethylbenzene	25	24.4	98	71-117
637-92-3	Ethyl tert-Butyl Ether	25	23.8	95	66-122

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-BS	E0066329.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
591-78-6	2-Hexanone	125	133	106	49-124
87-68-3	Hexachlorobutadiene	25	27.4	110	62-143
98-82-8	Isopropylbenzene	25	27.0	108	74-141
99-87-6	p-Isopropyltoluene	25	26.4	106	72-126
108-10-1	4-Methyl-2-pentanone	125	134	107	54-122
74-83-9	Methyl bromide	25	26.6	106	53-138
74-87-3	Methyl chloride	25	26.3	105	50-145
74-95-3	Methylene bromide	25	23.0	92	71-117
75-09-2	Methylene chloride	25	25.1	100	60-125
78-93-3	Methyl ethyl ketone	125	189	151* [a]	51-129
1634-04-4	Methyl Tert Butyl Ether	25	23.7	95	65-119
91-20-3	Naphthalene	25	27.4	110	43-139
103-65-1	n-Propylbenzene	25	25.6	102	72-123
100-42-5	Styrene	25	25.1	100	74-119
75-65-0	Tert Butyl Alcohol	250	276	110	35-146
630-20-6	1,1,1,2-Tetrachloroethane	25	24.9	100	74-119
71-55-6	1,1,1-Trichloroethane	25	26.0	104	72-129
79-34-5	1,1,2,2-Tetrachloroethane	25	24.3	97	62-121
79-00-5	1,1,2-Trichloroethane	25	23.6	94	70-119
87-61-6	1,2,3-Trichlorobenzene	25	26.0	104	44-144
96-18-4	1,2,3-Trichloropropane	25	22.3	89	61-124
120-82-1	1,2,4-Trichlorobenzene	25	25.0	100	57-132
95-63-6	1,2,4-Trimethylbenzene	25	24.2	97	70-121
108-67-8	1,3,5-Trimethylbenzene	25	25.7	103	66-119
127-18-4	Tetrachloroethylene	25	25.2	101	72-132
108-88-3	Toluene	25	23.9	96	73-119
79-01-6	Trichloroethylene	25	24.6	98	73-121
75-69-4	Trichlorofluoromethane	25	29.8	119	46-152
75-01-4	Vinyl chloride	25	26.5	106	54-126
1330-20-7	Xylene (total)	75	72.3	96	74-119

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	93%	68-124%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2944-BS	E0066329.D	1	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	80-119%
460-00-4	4-Bromofluorobenzene	100%	72-126%

(a) AZ:L5

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-BS	E0066192.D	1	03/19/18	FI	n/a	n/a	VE2938
VE2938-BSD [a]	E0066193.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	125	58.6	47	67.5	54	14	46-129/30
71-43-2	Benzene	25	24.8	99	23.7	95	5	68-119/30
108-86-1	Bromobenzene	25	22.4	90	21.8	87	3	71-119/30
74-97-5	Bromochloromethane	25	24.7	99	23.4	94	5	71-118/30
75-27-4	Bromodichloromethane	25	27.1	108	25.9	104	5	72-118/30
75-25-2	Bromoform	25	19.3	77	19.0	76	2	54-123/30
104-51-8	n-Butylbenzene	25	27.1	108	26.0	104	4	66-123/30
135-98-8	sec-Butylbenzene	25	26.2	105	25.5	102	3	72-123/30
98-06-6	tert-Butylbenzene	25	26.1	104	25.1	100	4	70-124/30
108-90-7	Chlorobenzene	25	23.7	95	22.6	90	5	74-120/30
75-00-3	Chloroethane	25	30.1	120	30.7	123	2	61-132/30
67-66-3	Chloroform	25	26.8	107	25.4	102	5	73-122/30
95-49-8	o-Chlorotoluene	25	24.8	99	24.0	96	3	71-122/30
106-43-4	p-Chlorotoluene	25	25.5	102	24.4	98	4	73-120/30
75-15-0	Carbon disulfide	25	28.3	113	28.4	114	0	55-140/30
56-23-5	Carbon tetrachloride	25	27.4	110	26.6	106	3	68-133/30
75-34-3	1,1-Dichloroethane	25	28.7	115	26.9	108	6	72-121/30
75-35-4	1,1-Dichloroethylene	25	31.2	125	29.3	117	6	67-140/30
563-58-6	1,1-Dichloropropene	25	30.3	121	28.6	114	6	73-130/30
96-12-8	1,2-Dibromo-3-chloropropane	25	24.5	98	23.5	94	4	47-133/30
106-93-4	1,2-Dibromoethane	25	24.5	98	23.8	95	3	69-121/30
107-06-2	1,2-Dichloroethane	25	27.7	111	26.2	105	6	68-121/30
78-87-5	1,2-Dichloropropane	25	25.8	103	24.5	98	5	72-116/30
142-28-9	1,3-Dichloropropane	25	23.8	95	23.3	93	2	70-118/30
594-20-7	2,2-Dichloropropane	25	25.6	102	24.2	97	6	57-141/30
124-48-1	Dibromochloromethane	25	25.2	101	24.6	98	2	68-119/30
75-71-8	Dichlorodifluoromethane	25	17.0	68	17.2	69	1	29-182/30
156-59-2	cis-1,2-Dichloroethylene	25	25.1	100	23.9	96	5	72-117/30
10061-01-5	cis-1,3-Dichloropropene	25	24.5	98	23.5	94	4	71-118/30
541-73-1	m-Dichlorobenzene	25	23.6	94	23.0	92	3	73-117/30
95-50-1	o-Dichlorobenzene	25	23.3	93	22.4	90	4	71-117/30
106-46-7	p-Dichlorobenzene	25	22.0	88	21.5	86	2	71-116/30
156-60-5	trans-1,2-Dichloroethylene	25	28.5	114	26.9	108	6	68-124/30
10061-02-6	trans-1,3-Dichloropropene	25	26.2	105	25.3	101	3	72-127/30
100-41-4	Ethylbenzene	25	25.4	102	24.7	99	3	71-117/30
637-92-3	Ethyl tert-Butyl Ether	25	24.8	99	23.7	95	5	66-122/30

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-BS	E0066192.D	1	03/19/18	FI	n/a	n/a	VE2938
VE2938-BSD [a]	E0066193.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	125	139	111	132	106	5	49-124/30
87-68-3	Hexachlorobutadiene	25	22.1	88	22.2	89	0	62-143/30
98-82-8	Isopropylbenzene	25	26.7	107	25.8	103	3	74-141/30
99-87-6	p-Isopropyltoluene	25	25.7	103	25.1	100	2	72-126/30
108-10-1	4-Methyl-2-pentanone	125	136	109	126	101	8	54-122/30
74-83-9	Methyl bromide	25	28.2	113	28.6	114	1	53-138/30
74-87-3	Methyl chloride	25	23.5	94	22.7	91	3	50-145/30
74-95-3	Methylene bromide	25	25.3	101	24.2	97	4	71-117/30
75-09-2	Methylene chloride	25	27.9	112	26.5	106	5	60-125/30
78-93-3	Methyl ethyl ketone	125	99.1	79	90.1	72	10	51-129/30
1634-04-4	Methyl Tert Butyl Ether	25	25.4	102	24.2	97	5	65-119/30
91-20-3	Naphthalene	25	21.5	86	21.3	85	1	43-139/30
103-65-1	n-Propylbenzene	25	25.7	103	24.9	100	3	72-123/30
100-42-5	Styrene	25	25.1	100	24.4	98	3	74-119/30
75-65-0	Tert Butyl Alcohol	250	162	65	147	59	10	35-146/30
630-20-6	1,1,1,2-Tetrachloroethane	25	25.7	103	24.9	100	3	74-119/30
71-55-6	1,1,1-Trichloroethane	25	28.7	115	27.5	110	4	72-129/30
79-34-5	1,1,2,2-Tetrachloroethane	25	24.8	99	24.1	96	3	62-121/30
79-00-5	1,1,2-Trichloroethane	25	24.7	99	23.6	94	5	70-119/30
87-61-6	1,2,3-Trichlorobenzene	25	20.2	81	20.3	81	0	44-144/30
96-18-4	1,2,3-Trichloropropane	25	24.2	97	22.9	92	6	61-124/30
120-82-1	1,2,4-Trichlorobenzene	25	21.4	86	20.8	83	3	57-132/30
95-63-6	1,2,4-Trimethylbenzene	25	24.7	99	24.1	96	2	70-121/30
108-67-8	1,3,5-Trimethylbenzene	25	25.8	103	25.0	100	3	66-119/30
127-18-4	Tetrachloroethylene	25	23.8	95	23.4	94	2	72-132/30
108-88-3	Toluene	25	24.2	97	23.5	94	3	73-119/30
79-01-6	Trichloroethylene	25	25.8	103	24.6	98	5	73-121/30
75-69-4	Trichlorofluoromethane	25	34.2	137	33.6	134	2	46-152/30
75-01-4	Vinyl chloride	25	25.5	102	25.6	102	0	54-126/30
1330-20-7	Xylene (total)	75	77.8	104	74.6	99	4	74-119/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	111%	108%	72-122%
17060-07-0	1,2-Dichloroethane-D4	119%	116%	68-124%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VE2938-BS	E0066192.D	1	03/19/18	FI	n/a	n/a	VE2938
VE2938-BSD [a]	E0066193.D	1	03/19/18	FI	n/a	n/a	VE2938

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-6

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
2037-26-5	Toluene-D8	103%	103%	80-119%
460-00-4	4-Bromofluorobenzene	103%	102%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18251-2MS	K359219.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2MSD	K359220.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2 [a]	K359218.D	10	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	TD18251-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		1250	1350	108	1250	1300	104	4	46-129/25
71-43-2	Benzene	ND		250	220	88	250	202	81	9	68-119/12
108-86-1	Bromobenzene	ND		250	206	82	250	195	78	5	71-119/12
74-97-5	Bromochloromethane	ND		250	233	93	250	220	88	6	71-118/13
75-27-4	Bromodichloromethane	ND		250	235	94	250	220	88	7	72-118/16
75-25-2	Bromoform	ND		250	185	74	250	178	71	4	54-123/17
104-51-8	n-Butylbenzene	ND		250	216	86	250	206	82	5	66-123/14
135-98-8	sec-Butylbenzene	ND		250	209	84	250	196	78	6	72-123/13
98-06-6	tert-Butylbenzene	ND		250	209	84	250	196	78	6	70-124/15
108-90-7	Chlorobenzene	ND		250	214	86	250	199	80	7	74-120/12
75-00-3	Chloroethane	ND		250	271	108	250	247	99	9	61-132/16
67-66-3	Chloroform	ND		250	224	90	250	205	82	9	73-122/13
95-49-8	o-Chlorotoluene	ND		250	205	82	250	193	77	6	71-122/12
106-43-4	p-Chlorotoluene	ND		250	211	84	250	198	79	6	73-120/12
75-15-0	Carbon disulfide	ND		250	228	91	250	215	86	6	55-140/24
56-23-5	Carbon tetrachloride	ND		250	228	91	250	207	83	10	68-133/20
75-34-3	1,1-Dichloroethane	ND		250	228	91	250	207	83	10	72-121/14
75-35-4	1,1-Dichloroethylene	84.2		250	307	89	250	279	78	10	67-140/18
563-58-6	1,1-Dichloropropene	ND		250	235	94	250	214	86	9	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		250	228	91	250	232	93	2	47-133/23
106-93-4	1,2-Dibromoethane	ND		250	230	92	250	216	86	6	69-121/13
107-06-2	1,2-Dichloroethane	ND		250	243	97	250	226	90	7	68-121/12
78-87-5	1,2-Dichloropropane	ND		250	222	89	250	206	82	7	72-116/12
142-28-9	1,3-Dichloropropane	ND		250	215	86	250	203	81	6	70-118/12
594-20-7	2,2-Dichloropropane	ND		250	253	101	250	219	88	14	57-141/16
124-48-1	Dibromochloromethane	ND		250	230	92	250	223	89	3	68-119/15
75-71-8	Dichlorodifluoromethane	ND		250	299	120	250	261	104	14	29-182/23
156-59-2	cis-1,2-Dichloroethylene	7.1	J	250	219	85	250	203	78	8	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		250	215	86	250	203	81	6	71-118/18
541-73-1	m-Dichlorobenzene	ND		250	213	85	250	198	79	7	73-117/12
95-50-1	o-Dichlorobenzene	ND		250	208	83	250	195	78	6	71-117/11
106-46-7	p-Dichlorobenzene	ND		250	201	80	250	190	76	6	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		250	221	88	250	205	82	8	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		250	224	90	250	214	86	5	72-127/17
100-41-4	Ethylbenzene	ND		250	215	86	250	198	79	8	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		250	212	85	250	201	80	5	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18251-2MS	K359219.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2MSD	K359220.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2 [a]	K359218.D	10	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Compound	TD18251-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		1250	1120	90	1250	1100	88	2	49-124/21
87-68-3	Hexachlorobutadiene	ND		250	209	84	250	211	84	1	62-143/18
98-82-8	Isopropylbenzene	ND		250	215	86	250	200	80	7	74-141/13
99-87-6	p-Isopropyltoluene	ND		250	213	85	250	201	80	6	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		1250	1140	91	1250	1100	88	4	54-122/20
74-83-9	Methyl bromide	ND		250	305	122	250	283	113	7	53-138/16
74-87-3	Methyl chloride	ND		250	261	104	250	231	92	12	50-145/17
74-95-3	Methylene bromide	ND		250	237	95	250	222	89	7	71-117/12
75-09-2	Methylene chloride	ND		250	220	88	250	209	84	5	60-125/16
78-93-3	Methyl ethyl ketone	ND		1250	1230	98	1250	1170	94	5	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		250	228	91	250	215	86	6	65-119/13
91-20-3	Naphthalene	ND		250	199	80	250	202	81	1	43-139/28
103-65-1	n-Propylbenzene	ND		250	205	82	250	191	76	7	72-123/13
100-42-5	Styrene	ND		250	220	88	250	206	82	7	74-119/19
75-65-0	Tert Butyl Alcohol	ND		2500	2150	86	2500	2220	89	3	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		250	226	90	250	213	85	6	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		250	237	95	250	217	87	9	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	225	90	250	220	88	2	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		250	225	90	250	214	86	5	70-119/13
87-61-6	1,2,3-Trichlorobenzene	ND		250	201	80	250	201	80	0	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		250	221	88	250	210	84	5	61-124/16
120-82-1	1,2,4-Trichlorobenzene	ND		250	203	81	250	201	80	1	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		250	205	82	250	192	77	7	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		250	213	85	250	199	80	7	66-119/15
127-18-4	Tetrachloroethylene	ND		250	212	85	250	195	78	8	72-132/14
108-88-3	Toluene	ND		250	209	84	250	194	78	7	73-119/13
79-01-6	Trichloroethylene	583		250	751	67* [b]	250	698	46* [b]	7	73-121/13
75-69-4	Trichlorofluoromethane	ND		250	310	124	250	278	111	11	46-152/25
75-01-4	Vinyl chloride	ND		250	249	100	250	224	90	11	54-126/17
1330-20-7	Xylene (total)	ND		750	643	86	750	592	79	8	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD18251-2	Limits
1868-53-7	Dibromofluoromethane	98%	98%	96%	72-122%
17060-07-0	1,2-Dichloroethane-D4	106%	105%	106%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18251-2MS	K359219.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2MSD	K359220.D	10	03/22/18	FI	n/a	n/a	VK2209
TD18251-2 [a]	K359218.D	10	03/22/18	FI	n/a	n/a	VK2209

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-3, TD18251-4, TD18251-5, TD18251-7

CAS No.	Surrogate Recoveries	MS	MSD	TD18251-2	Limits
2037-26-5	Toluene-D8	99%	99%	98%	80-119%
460-00-4	4-Bromofluorobenzene	98%	99%	98%	72-126%

(a) Sample used for QC purposes only.
(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18111-1MS	K359273.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1MSD	K359274.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1	K359275.D	1	03/23/18	FI	n/a	n/a	VK2211
TD18111-1 [a]	K359269.D	50	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	TD18111-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	32.3	J	6250	6570	105	6250	6260	100	5	46-129/25
71-43-2	Benzene	52.8		1250	1100	84	1250	1160	89	5	68-119/12
108-86-1	Bromobenzene	ND		1250	993	79	1250	1040	83	5	71-119/12
74-97-5	Bromochloromethane	ND		1250	1130	90	1250	1180	94	4	71-118/13
75-27-4	Bromodichloromethane	ND		1250	1140	91	1250	1220	98	7	72-118/16
75-25-2	Bromoform	ND		1250	914	73	1250	944	76	3	54-123/17
104-51-8	n-Butylbenzene	0.53	J	1250	1070	86	1250	1140	91	6	66-123/14
135-98-8	sec-Butylbenzene	0.36	J	1250	1010	81	1250	1080	86	7	72-123/13
98-06-6	tert-Butylbenzene	ND		1250	1020	82	1250	1080	86	6	70-124/15
108-90-7	Chlorobenzene	ND		1250	1030	82	1250	1090	87	6	74-120/12
75-00-3	Chloroethane	ND		1250	1160	93	1250	1230	98	6	61-132/16
67-66-3	Chloroform	ND		1250	1060	85	1250	1120	90	6	73-122/13
95-49-8	o-Chlorotoluene	ND		1250	990	79	1250	1040	83	5	71-122/12
106-43-4	p-Chlorotoluene	ND		1250	1020	82	1250	1070	86	5	73-120/12
75-15-0	Carbon disulfide	ND		1250	1030	82	1250	1160	93	12	55-140/24
56-23-5	Carbon tetrachloride	ND		1250	1130	90	1250	1220	98	8	68-133/20
75-34-3	1,1-Dichloroethane	ND		1250	1070	86	1250	1110	89	4	72-121/14
75-35-4	1,1-Dichloroethylene	ND		1250	1090	87	1250	1160	93	6	67-140/18
563-58-6	1,1-Dichloropropene	ND		1250	1130	90	1250	1220	98	8	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		1250	1150	92	1250	1160	93	1	47-133/23
106-93-4	1,2-Dibromoethane	ND		1250	1120	90	1250	1140	91	2	69-121/13
107-06-2	1,2-Dichloroethane	ND		1250	1210	97	1250	1250	100	3	68-121/12
78-87-5	1,2-Dichloropropane	ND		1250	1060	85	1250	1110	89	5	72-116/12
142-28-9	1,3-Dichloropropane	ND		1250	1040	83	1250	1090	87	5	70-118/12
594-20-7	2,2-Dichloropropane	ND		1250	1170	94	1250	1240	99	6	57-141/16
124-48-1	Dibromochloromethane	ND		1250	1140	91	1250	1190	95	4	68-119/15
75-71-8	Dichlorodifluoromethane	ND		1250	1290	103	1250	1360	109	5	29-182/23
156-59-2	cis-1,2-Dichloroethylene	ND		1250	1030	82	1250	1090	87	6	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		1250	1060	85	1250	1120	90	6	71-118/18
541-73-1	m-Dichlorobenzene	ND		1250	1030	82	1250	1090	87	6	73-117/12
95-50-1	o-Dichlorobenzene	ND		1250	1020	82	1250	1060	85	4	71-117/11
106-46-7	p-Dichlorobenzene	ND		1250	971	78	1250	1030	82	6	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		1250	1070	86	1250	1040	83	3	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		1250	1100	88	1250	1150	92	4	72-127/17
100-41-4	Ethylbenzene	ND		1250	1040	83	1250	1100	88	6	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		1250	991	79	1250	1030	82	4	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18111-1MS	K359273.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1MSD	K359274.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1	K359275.D	1	03/23/18	FI	n/a	n/a	VK2211
TD18111-1 [a]	K359269.D	50	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Compound	TD18111-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		6250	5510	88	6250	5560	89	1	49-124/21
87-68-3	Hexachlorobutadiene	1.2		1250	1060	85	1250	1160	93	9	62-143/18
98-82-8	Isopropylbenzene	ND		1250	1020	82	1250	1100	88	8	74-141/13
99-87-6	p-Isopropyltoluene	0.34	J	1250	1040	83	1250	1100	88	6	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		6250	5610	90	6250	5620	90	0	54-122/20
74-83-9	Methyl bromide	ND		1250	1340	107	1250	1440	115	7	53-138/16
74-87-3	Methyl chloride	0.79	J	1250	1100	88	1250	1110	89	1	50-145/17
74-95-3	Methylene bromide	ND		1250	1160	93	1250	1200	96	3	71-117/12
75-09-2	Methylene chloride	ND		1250	922	74	1250	981	78	6	60-125/16
78-93-3	Methyl ethyl ketone	ND		6250	5990	96	6250	5860	94	2	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		1250	1090	87	1250	1050	84	4	65-119/13
91-20-3	Naphthalene	0.54	J	1250	991	79	1250	1050	84	6	43-139/28
103-65-1	n-Propylbenzene	ND		1250	984	79	1250	1040	83	6	72-123/13
100-42-5	Styrene	ND		1250	1050	84	1250	1130	90	7	74-119/19
75-65-0	Tert Butyl Alcohol	ND		12500	10900	87	12500	10100	81	8	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		1250	1080	86	1250	1160	93	7	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		1250	1130	90	1250	1210	97	7	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		1250	1100	88	1250	1110	89	1	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		1250	1090	87	1250	1120	90	3	70-119/13
87-61-6	1,2,3-Trichlorobenzene	0.76	J	1250	1000	80	1250	1080	86	8	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		1250	1070	86	1250	1090	87	2	61-124/16
120-82-1	1,2,4-Trichlorobenzene	0.50	J	1250	1000	80	1250	1080	86	8	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		1250	999	80	1250	1050	84	5	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		1250	1030	82	1250	1100	88	7	66-119/15
127-18-4	Tetrachloroethylene	ND		1250	1040	83	1250	1110	89	7	72-132/14
108-88-3	Toluene	ND		1250	1020	82	1250	1080	86	6	73-119/13
79-01-6	Trichloroethylene	ND		1250	1070	86	1250	1120	90	5	73-121/13
75-69-4	Trichlorofluoromethane	ND		1250	1390	111	1250	1430	114	3	46-152/25
75-01-4	Vinyl chloride	ND		1250	1060	85	1250	1140	91	7	54-126/17
1330-20-7	Xylene (total)	ND		3750	3110	83	3750	3280	87	5	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD18111-1	TD18111-1	Limits
1868-53-7	Dibromofluoromethane	95%	97%	95%	93%	72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	107%	107%	106%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18111-1MS	K359273.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1MSD	K359274.D	50	03/23/18	FI	n/a	n/a	VK2211
TD18111-1	K359275.D	1	03/23/18	FI	n/a	n/a	VK2211
TD18111-1 [a]	K359269.D	50	03/23/18	FI	n/a	n/a	VK2211

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-1

CAS No.	Surrogate Recoveries	MS	MSD	TD18111-1	TD18111-1	Limits
2037-26-5	Toluene-D8	99%	99%	99%	99%	80-119%
460-00-4	4-Bromofluorobenzene	97%	97%	97%	99%	72-126%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18194-1MS	E0066341.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1MSD	E0066342.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1	E0066338.D	5	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	TD18194-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		625	833	133*	625	835	134*	0	46-129/25
71-43-2	Benzene	ND		125	120	96	125	122	98	2	68-119/12
108-86-1	Bromobenzene	ND		125	119	95	125	122	98	2	71-119/12
74-97-5	Bromochloromethane	ND		125	124	99	125	122	98	2	71-118/13
75-27-4	Bromodichloromethane	ND		125	128	102	125	131	105	2	72-118/16
75-25-2	Bromoform	382		125	524	114	125	537	124* [a]	2	54-123/17
104-51-8	n-Butylbenzene	ND		125	137	110	125	137	110	0	66-123/14
135-98-8	sec-Butylbenzene	ND		125	139	111	125	140	112	1	72-123/13
98-06-6	tert-Butylbenzene	ND		125	132	106	125	133	106	1	70-124/15
108-90-7	Chlorobenzene	ND		125	120	96	125	120	96	0	74-120/12
75-00-3	Chloroethane	ND		125	127	102	125	132	106	4	61-132/16
67-66-3	Chloroform	ND		125	126	101	125	123	98	2	73-122/13
95-49-8	o-Chlorotoluene	ND		125	122	98	125	123	98	1	71-122/12
106-43-4	p-Chlorotoluene	ND		125	124	99	125	126	101	2	73-120/12
75-15-0	Carbon disulfide	ND		125	137	110	125	141	113	3	55-140/24
56-23-5	Carbon tetrachloride	ND		125	138	110	125	138	110	0	68-133/20
75-34-3	1,1-Dichloroethane	ND		125	132	106	125	130	104	2	72-121/14
75-35-4	1,1-Dichloroethylene	ND		125	136	109	125	136	109	0	67-140/18
563-58-6	1,1-Dichloropropene	ND		125	133	106	125	130	104	2	73-130/15
96-12-8	1,2-Dibromo-3-chloropropane	ND		125	138	110	125	144	115	4	47-133/23
106-93-4	1,2-Dibromoethane	ND		125	121	97	125	121	97	0	69-121/13
107-06-2	1,2-Dichloroethane	ND		125	116	93	125	115	92	1	68-121/12
78-87-5	1,2-Dichloropropane	ND		125	122	98	125	123	98	1	72-116/12
142-28-9	1,3-Dichloropropane	ND		125	115	92	125	115	92	0	70-118/12
594-20-7	2,2-Dichloropropane	ND		125	133	106	125	132	106	1	57-141/16
124-48-1	Dibromochloromethane	14.0		125	148	107	125	150	109	1	68-119/15
75-71-8	Dichlorodifluoromethane	ND		125	135	108	125	137	110	1	29-182/23
156-59-2	cis-1,2-Dichloroethylene	ND		125	125	100	125	123	98	2	72-117/13
10061-01-5	cis-1,3-Dichloropropene	ND		125	117	94	125	119	95	2	71-118/18
541-73-1	m-Dichlorobenzene	ND		125	122	98	125	126	101	3	73-117/12
95-50-1	o-Dichlorobenzene	ND		125	119	95	125	121	97	2	71-117/11
106-46-7	p-Dichlorobenzene	ND		125	117	94	125	119	95	2	71-116/11
156-60-5	trans-1,2-Dichloroethylene	ND		125	130	104	125	128	102	2	68-124/15
10061-02-6	trans-1,3-Dichloropropene	ND		125	126	101	125	126	101	0	72-127/17
100-41-4	Ethylbenzene	14.8		125	143	103	125	143	103	0	71-117/12
637-92-3	Ethyl tert-Butyl Ether	ND		125	118	94	125	119	95	1	66-122/12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18194-1MS	E0066341.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1MSD	E0066342.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1	E0066338.D	5	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Compound	TD18194-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
591-78-6	2-Hexanone	ND		625	726	116	625	731	117	1	49-124/21
87-68-3	Hexachlorobutadiene	ND		125	136	109	125	141	113	4	62-143/18
98-82-8	Isopropylbenzene	ND		125	137	110	125	139	111	1	74-141/13
99-87-6	p-Isopropyltoluene	ND		125	140	112	125	140	112	0	72-126/13
108-10-1	4-Methyl-2-pentanone	ND		625	723	116	625	725	116	0	54-122/20
74-83-9	Methyl bromide	ND		125	134	107	125	138	110	3	53-138/16
74-87-3	Methyl chloride	ND		125	131	105	125	137	110	4	50-145/17
74-95-3	Methylene bromide	ND		125	120	96	125	120	96	0	71-117/12
75-09-2	Methylene chloride	ND		125	130	104	125	130	104	0	60-125/16
78-93-3	Methyl ethyl ketone	ND		625	944	151*	625	977	156*	3	51-129/22
1634-04-4	Methyl Tert Butyl Ether	ND		125	120	96	125	120	96	0	65-119/13
91-20-3	Naphthalene	ND		125	130	104	125	141	113	8	43-139/28
103-65-1	n-Propylbenzene	ND		125	130	104	125	132	106	2	72-123/13
100-42-5	Styrene	ND		125	129	103	125	129	103	0	74-119/19
75-65-0	Tert Butyl Alcohol	ND		1250	1420	114	1250	1460	117	3	35-146/35
630-20-6	1,1,1,2-Tetrachloroethane	ND		125	133	106	125	133	106	0	74-119/14
71-55-6	1,1,1-Trichloroethane	ND		125	138	110	125	137	110	1	72-129/14
79-34-5	1,1,2,2-Tetrachloroethane	ND		125	125	100	125	129	103	3	62-121/17
79-00-5	1,1,2-Trichloroethane	ND		125	120	96	125	121	97	1	70-119/13
87-61-6	1,2,3-Trichlorobenzene	ND		125	122	98	125	131	105	7	44-144/27
96-18-4	1,2,3-Trichloropropane	ND		125	115	92	125	119	95	3	61-124/16
120-82-1	1,2,4-Trichlorobenzene	ND		125	123	98	125	128	102	4	57-132/18
95-63-6	1,2,4-Trimethylbenzene	ND		125	125	100	125	126	101	1	70-121/15
108-67-8	1,3,5-Trimethylbenzene	ND		125	132	106	125	134	107	2	66-119/15
127-18-4	Tetrachloroethylene	ND		125	130	104	125	130	104	0	72-132/14
108-88-3	Toluene	ND		125	124	99	125	123	98	1	73-119/13
79-01-6	Trichloroethylene	ND		125	126	101	125	126	101	0	73-121/13
75-69-4	Trichlorofluoromethane	ND		125	163	130	125	164	131	1	46-152/25
75-01-4	Vinyl chloride	ND		125	130	104	125	137	110	5	54-126/17
1330-20-7	Xylene (total)	4.6	J	375	386	102	375	385	101	0	74-119/13

CAS No.	Surrogate Recoveries	MS	MSD	TD18194-1	Limits
1868-53-7	Dibromofluoromethane	102%	101%	102%	72-122%
17060-07-0	1,2-Dichloroethane-D4	99%	99%	102%	68-124%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18194-1MS	E0066341.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1MSD	E0066342.D	5	03/26/18	FI	n/a	n/a	VE2944
TD18194-1	E0066338.D	5	03/26/18	FI	n/a	n/a	VE2944

The QC reported here applies to the following samples: **Method:** SW846 8260C

TD18251-2

CAS No.	Surrogate Recoveries	MS	MSD	TD18194-1	Limits
2037-26-5	Toluene-D8	101%	101%	102%	80-119%
460-00-4	4-Bromofluorobenzene	99%	99%	103%	72-126%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS839-MB	SS019062.D	1	03/26/18	SC	n/a	n/a	GSS839

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.50	0.43	ug/l	
74-85-1	Ethene	ND	1.0	0.93	ug/l	
74-84-0	Ethane	ND	1.0	0.65	ug/l	

Blank Spike/Blank Spike Duplicate Summary

Job Number: TD18251
Account: HALDAZP Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GSS839-BS	SS019060.D	1	03/26/18	SC	n/a	n/a	GSS839
GSS839-BSD [a]	SS019061.D	1	03/26/18	SC	n/a	n/a	GSS839

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
74-82-8	Methane	21.5	25.7	120	24.3	113	6	68-139/30
74-85-1	Ethene	57.4	51.6	90	45.5	79	13	52-145/30
74-84-0	Ethane	43.3	45.3	105	39.9	92	13	68-131/30

(a) Insufficient sample available for MS/MSD. AZ:Q9

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD18251
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate	GN88570	5.0	1.0	mg/l				
Alkalinity, Carbonate	GN88571	5.0	0.0	mg/l				
Alkalinity, Total as CaCO3	GN88569	5.0	0.0	mg/l	100	94.0	94.0	90-100%
Bromide	GP46777/GN88555	0.50	0.0	mg/l	10	10.0	100.0	90-110%
Chloride	GP46777/GN88555	0.50	0.0	mg/l	10	9.97	99.7	90-110%
Fluoride	GP46777/GN88555	0.50	0.0	mg/l	10	10.9	109.0	90-110%
Iron, Ferrous	GN88487	0.10	0.0	mg/l	4	4.0	99.0	94-103%
Nitrogen, Nitrate	GP46777/GN88555	0.50	0.0	mg/l	10	9.69	96.9	90-110%
Nitrogen, Nitrite	GP46777/GN88555	0.50	0.0	mg/l	10	10.1	101.0	90-110%
Sulfate	GP46777/GN88555	0.50	0.0	mg/l	10	10.4	104.0	90-110%

Associated Samples:
Batch GN88487: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88569: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88570: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88571: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GP46777: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD18251
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Bicarbonate	GN88570	TD18251-1	mg/l	285	284	0.0	0-10%
Alkalinity, Carbonate	GN88571	TD18251-1	mg/l	0.0	0.0	0.0	0-20%
Alkalinity, Total as CaCO3	GN88569	TD18251-1	mg/l	285	285	0.0	0-10%
Chloride	GP46777/GN88555	TD18060-1	mg/l	529	508	4.1	0-20%
Iron, Ferrous	GN88487	TD18251-1	mg/l	0.0	0.0	0.0	0-10%
Sulfate	GP46777/GN88555	TD18060-1	mg/l	957	985	2.9	0-20%

Associated Samples:
Batch GN88487: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88569: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88570: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88571: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GP46777: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD18251
Account: HALDAZP - Haley & Aldrich
Project: Plymouth Tube Groundwater Monitoring - 128159-003

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN88569	TD18251-1	mg/l	285	25	310	100.0	75-117%
Chloride	GP46777/GN88555	TD18060-1	mg/l	529	500	1030	100.2	80-120%
Iron, Ferrous	GN88487	TD18251-1	mg/l	0.0	4	3.9	96.0	89-106%
Sulfate	GP46777/GN88555	TD18060-1	mg/l	957	1000	2100	114.3	80-120%

Associated Samples:
Batch GN88487: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GN88569: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
Batch GP46777: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(SGS Orlando, FL)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #:
Bottle Order Control #:
SGS Quote #:
SGS Job #: TD18251

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-031518		3/15/18	8:30:00 AM		AQ	3	3								X	
2	PT-2S-90-031518		3/15/18	11:20:00 AM		AQ	3	3								X	
3	LB-7R-90-031518		3/15/18	12:30:00 PM		AQ	3	3								X	
4	ISCO-1-D-98-031518		3/15/18	2:10:00 PM		AQ	3	3								X	
5	ISCO-1-S-85-031518		3/15/18	3:25:00 PM		AQ	3	3								X	

Number of preserved Bottles

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 3/23/2018

Approved By (SGS PM): / Date:

Emergency & Rush T/Adata available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date/Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3/16/18	1	2	03-17-18	2 J. Compel 10:45
Relinquished by Sampler: 3	Date/Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp. 3.4

9.1

9

TD18251: Chain of Custody
Page 1 of 3
SGS Orlando, FL

SGS Sample Receipt Summary

Job Number: TD18251 **Client:** SGSTX **Project:** PLYMOUTH

Date / Time Received: 3/17/2018 10:45:00 AM **Delivery Method:** FX **Airbill #'s:** 7314 4447 2395

Therm ID: IR 1; **Therm CF:** 0.4; **# of Coolers:** 1

Cooler Temps (Raw Measured) °C: Cooler 2: (2.4);

Cooler Temps (Corrected) °C: Cooler 2: (2.8);

Cooler Information	Y	or	N
1. Custody Seals Present	☑		☐
2. Custody Seals Intact	☑		☐
3. Temp criteria achieved	☑		☐
4. Cooler temp verification	IR Gun		
5. Cooler media	Ice (Bag)		

Trip Blank Information	Y	or	N	N/A
1. Trip Blank present / cooler	☐		☐	☑
2. Trip Blank listed on COC	☐		☐	☑
	W	**or**	**S**	**N/A**
3. Type Of TB Received	☐		☐	☑

Sample Information	Y	or	N	N/A
1. Sample labels present on bottles	☑		☐	
2. Samples preserved properly	☑		☐	
3. Sufficient volume/containers recvd for analysis:	☑		☐	
4. Condition of sample	Intact			
5. Sample recvd within HT	☑		☐	
6. Dates/Times/IDs on COC match Sample Label	☑		☐	
7. VOCs have headspace	☐		☐	☑
8. Bottles received for unspecified tests	☐		☑	
9. Compositing instructions clear	☐		☐	☑
10. Voa Soil Kits/Jars received past 48hrs?	☐		☐	☑
11. % Solids Jar received?	☐		☐	☑
12. Residual Chlorine Present?	☐		☐	☑

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____

Test Strip Lot #s: pH 0-3 230315 pH 10-12 219813A Other: (Specify) _____ _____

Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: JORGEC Date: 3/17/2018 10:45:00 A Reviewer: tl Date: 3/20/2018

9.1

9

TD18251: Chain of Custody
Page 2 of 3

CHAIN OF CUSTODY

SGS

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # TD18251

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: anita.patel@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260SIMDIOX	LAB USE ONLY
1	PT-3-90-031518		3/15/18	8:30:00 AM		AQ	3									X	
2	PT-2S-90-031518		3/15/18	11:20:00 AM		AQ	1									X	
3	LB-7R-90-031518		3/15/18	12:30:00 PM		AQ	1									X	
4	ISCO-1-D-98-031518		3/15/18	2:10:00 PM		AQ	1									X	
5	ISCO-1-S-85-031518		3/15/18	3:25:00 PM		AQ	1									X	

Turnaround Time (Business days)

Approved By (SGS PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [x] other Due 3/23/2018

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [x] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3/19/18 1630	1	2		2 3/20/18 915
3		3	4		4
5		5			

Custody Seal # [ ] Intact [ ] Not intact Preserved where applicable [ ] On Ice [ ] Cooler Temp 2.8

TD18251: Chain of Custody
Page 3 of 3

MS Volatiles

QC Data Summaries

(SGS Orlando, FL)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1926-MB	Z51160.D	1	03/23/18	MM	n/a	n/a	VZ1926

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-2

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	103%	74-125%
2037-26-5	Toluene-D8	102%	88-111%

Method Blank Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1927-MB	Z51191.D	1	03/26/18	MM	n/a	n/a	VZ1927

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-1, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
17060-07-0	1,2-Dichloroethane-D4	96%	74-125%
2037-26-5	Toluene-D8	107%	88-111%

Blank Spike Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1926-BS	Z51158.D	1	03/23/18	MM	n/a	n/a	VZ1926

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	20.1	101	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	101%	74-125%
2037-26-5	Toluene-D8	103%	88-111%

10.2.1

10

* = Outside of Control Limits.

Blank Spike Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ1927-BS	Z51190.D	1	03/26/18	MM	n/a	n/a	VZ1927

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-1, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
123-91-1	1,4-Dioxane	20	15.0	75	65-121

CAS No.	Surrogate Recoveries	BSP	Limits
17060-07-0	1,2-Dichloroethane-D4	98%	74-125%
2037-26-5	Toluene-D8	104%	88-111%

10.2.2

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD18246-1MS	Z51180.D	1	03/23/18	MM	n/a	n/a	VZ1926
TD18246-1MSD	Z51181.D	1	03/23/18	MM	n/a	n/a	VZ1926
TD18246-1	Z51174.D	1	03/23/18	MM	n/a	n/a	VZ1926

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-2

CAS No.	Compound	TD18246-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	15.1		20	32.6	88	20	22.9	39*	35* [a]	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	TD18246-1	Limits
17060-07-0	1,2-Dichloroethane-D4	95%	98%	97%	74-125%
2037-26-5	Toluene-D8	107%	106%	106%	88-111%

(a) AZ:R9

10.3.1

10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: TD18251
Account: ALGC SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
FA52696-3MS	Z51209.D	1	03/26/18	MM	n/a	n/a	VZ1927
FA52696-3MSD	Z51210.D	1	03/26/18	MM	n/a	n/a	VZ1927
FA52696-3	Z51194.D	1	03/26/18	MM	n/a	n/a	VZ1927

The QC reported here applies to the following samples: **Method:** SW846 8260B BY SIM

TD18251-1, TD18251-3, TD18251-4, TD18251-5

CAS No.	Compound	FA52696-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
123-91-1	1,4-Dioxane	ND		20	13.4	67	20	11.3	57*	17	65-121/27

CAS No.	Surrogate Recoveries	MS	MSD	FA52696-3	Limits
17060-07-0	1,2-Dichloroethane-D4	100%	101%	99%	74-125%
2037-26-5	Toluene-D8	105%	106%	104%	88-111%

10.3.2

10

* = Outside of Control Limits.

Misc. Forms

Custody Documents and Other Forms

(SGS Scott, LA)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS

10165 Harwin Drive, Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.sgs.com

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job # TD18251

Client / Reporting Information

Company Name: SGS North America Inc.
Street Address: 10165 Harwin Drive
City: Houston State: TX Zip: 77036
Project Contact: Trameshia.Brown@sgs.com E-mail:
Phone #: 713-271-4700 Fax #:
Sampler(s) Name(s): Phone:

Project Information

Project Name: Plymouth Tube Groundwater Monitoring - 128159-003
Street:
City: State:
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)
Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	FE_NA	LAB USE ONLY
1	PT-3-90-031518		3/15/18	8:30:00 AM		AQ	1			x						X	/
2	PT-2S-90-031518		3/15/18	11:20:00 AM		AQ	1			x						X	/
3	LB-7R-90-031518		3/15/18	12:30:00 PM		AQ	1			x						X	/
4	ISCO-1-D-98-031518		3/15/18	2:10:00 PM		AQ	1			x						X	/
5	ISCO-1-S-85-031518		3/15/18	3:25:00 PM		AQ	1			x						X	/

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [X] other Due 3/23/2018

Emergency & Rush T/A data available VIA Lablink

Approved By (SGS PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [X] Other COMMBN

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions: 3W2 LA

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	3/16/18	1 SGS	2 SGS		2
3	3/16/18 3:30	3 Mark Red 3-17-18 07:40	4		4
5		5			

Custody Seal # CS/OC [ ] Intact [ ] Not intact Preserved where applicable [ ] On Ice [ ] Cooler Temp. 1.6 DV441

11.1 11

TD18251: Chain of Custody
Page 1 of 2
SGS Scott, LA

SGS Sample Receipt Summary

Job Number: TD18251 **Client:** SGS NORTH AMERICA **Project:** PLYMOUTH TUBE GW

Date / Time Received: 3/17/2018 7:40:00 AM **Delivery Method:** Accutest Courier **Airbill #'s:**

Cooler Temps (Initial/Adjusted): #1: (1.6/1.6); DV441

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Thermometer ID:	DV441;		
3. Cooler media:	Ice (direct contact)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Comments

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

TD18251: Chain of Custody
Page 2 of 2

Metals Analysis

QC Data Summaries

(SGS Scott, LA)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/19/18

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	10	45		
Antimony	6.0	1.5	3.4		
Arsenic	10	1.5	1.9		
Barium	10	.25	1		
Beryllium	4.0	.04	.2		
Boron	100	1.4	8.3		
Cadmium	5.0	.13	1.3		
Calcium	100	5.9	9.2		
Chromium	10	.35	.2		
Cobalt	10	.15	1.4		
Copper	10	.98	4		
Iron	100	4.3	22	-5.8	<100
Lead	10	.79	2.7		
Lithium	10	2	5.2		
Magnesium	100	19	72		
Manganese	10	3.6	.3		
Molybdenum	10	.19	1.1		
Nickel	10	.67	1.8		
Potassium	500	37	140		
Selenium	10	1.7	5.3		
Silver	10	.42	2		
Sodium	500	89	78	-86	<500
Strontium	10	.08	.2		
Thallium	5.0	1.4	4.8		
Tin	10	.51	2.2		
Titanium	10	.34	1.2		
Vanadium	10	.28	.8		
Zinc	20	9.9	.7		

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/19/18

Metal	LA42290-1 Original	MS	Spikelot ICPSPIKE1%	Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	anr				
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper					
Iron	1660	2750	1000	104.0	75-125
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium	anr				
Silver	anr				
Sodium	283000	293000	10000	100.0	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963 Methods: SW846 6010C
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 03/19/18

Metal	LA42290-1 Original	MSD	Spikelot ICPSPIKE1%	Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	anr					
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper						
Iron	1660	2730	1000	102.0	0.7	20
Lead	anr					
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium	anr					
Silver	anr					
Sodium	283000	284000	10000	10.0 (a)	3.1	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/19/18

Metal	BSP Result	Spikelot ICPSPIKE1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron	1060	1000	106.0	80-120
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium	anr			
Silver	anr			
Sodium	10200	10000	102.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD18251
Account: ALGC - SGS Houston, TX
Project: HALDAZP: Plymouth Tube Groundwater Monitoring - 128159-003

QC Batch ID: MP10963
Matrix Type: AQUEOUS

Methods: SW846 6010C
Units: ug/l

Prep Date: 03/19/18

Metal	LA42290-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron	1660	1680	1.7	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium	anr			
Silver	anr			
Sodium	283000	287000	1.3	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP10963: TD18251-1, TD18251-2, TD18251-3, TD18251-4, TD18251-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested