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Site Assessment Report and Remediation Plan

Vacuum Glorietta West Unit
Produced Water Spill Site
Lea County, New Mexico
New Mexico Oil Conservation Division (NMOCD) Incident ID: NCH1832058269

Prepared For:
Chevron Mid-Continent Business Unit (MCBU)

Prepared By:
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Chevron Mid-Continent Business Unit (MCBU)

September 2020
AECOM Project No. 60596678

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Executive Summary

Vacuum Glorietta West Unit (VGWU), Lea County, NM, NMOC Incident ID: 1832058269

Site Background		
Release Description(s): On October 26, 2018, approximately 155.1 barrels (bbls) of produced water, with a dissolved chloride concentration greater than 10,000 milligrams per liter (mg/L), occurred at the Site as the result of internal corrosion of a buried transfer line Approximately 130 bbls of released fluids were recovered. The reported spill location lies within a significant flowline corridor immediately west of the Chevron CO2 Plant in the Vacuum Field.	**Release Response:** Stopped the release at the source, secured the impacted area to prevent impact to protect human health and the environment, contained the release, and recovered approximately 130 bbls of produced water.	**Current and Planned Future Land Use:** The Site and surrounding area are used for oil and gas exploration, development and production (E&P), and livestock grazing. Future land use is expected to be the same as the current use.

Summary of Sensitive Receptor Survey

Sensitive Receptors Survey Results:

- No continuously flowing watercourses, known springs, or wells used for domestic or stock watering purposes were identified within 1,000 feet of the Site.
- The Site is not located within 200 ft of any lakebed, known sinkhole, or playa lake.
- No occupied permanent residence, school, hospital, institution, church, incorporated municipal boundaries or defined municipal fresh water well fields are located within 10 miles of the Site.
- No wetlands are present within 300 feet of the Site.
- No subsurface mines are located beneath the Site, no karst geology features, or other unstable areas are known to be located near the Site, and the Site is not located within a 100-year floodplain.
- Operations near the Site are for agricultural/livestock grazing use and oil and gas exploration, development, production, or storage only, and no impact to areas that are not on an exploration, development, production, or storage site are expected.

Constituent	19.15.29.12 NMAC Table 1 Regulatory Limits		Maximum Concentration Detected (mg/kg)
	Groundwater depth of < 50 ft bgs	Groundwater depth of 51-100 ft bgs	
Chloride	600	10,000	12,500
TPH	100	2,500	45.5

Soil Assessment Results Discussion

Soil Sample Results Comparison to 19.15.29.12 NMAC Table I Regulatory Limits: Groundwater was not observed to a depth of 51 feet below ground surface (ft bgs) in boring GWU-18. The chloride concentration of 12,500 mg/kg reported for sample GWU-07-0-1 exceeds the *Table I* regulatory limit of 10,000 mg/kg for sites where groundwater depth is 51 to 100 ft bgs. No other samples exhibited COC concentrations above the applicable regulatory limits listed in *Table I*.

Soil Sample Results Comparison to 19.15.29.13.D.(1) NMAC Reclamation Standard of 600 mg/kg Chloride and 100 mg/kg TPH: None of the laboratory analytical results indicated BTEX and/or TPH concentrations that exceeded the soil reclamation standards. Chloride concentrations exceeded the reclamation standard of 600 mg/kg in samples collected from borings GWU-01, GWU-02, GWU-04, GWU-06, GWU-07 and GWU-12 . Based on the analytical results for borings GWU-02, GWU-04, GWU-06 and GWU-12, which exhibited chloride concentrations in excess of 600 mg/kg to depths of three to four ft bgs, it is currently assumed that **future remediation/reclamation of impacted soil to a depth of four ft bgs will be required**, potentially in an area as large as the area defined by borings GWU-16 through GWU-19 (**Figure 4**).

Path Forward Recommendations

Chevron MCBU requests NMOCD approval for deferral of remediation/reclamation of chloride-impacted soil in accordance with 19.15.29.12(C)(2), based on the following:

- Chloride is the only COC that exceeds the applicable regulatory limits. The horizontal extent of chloride in soil is delineated based on the sampling results for borings GWU-16 through GWU-19 which were drilled immediately outside of the flowline corridor.
- Vertical delineation of elevated chloride concentrations is demonstrated by bottom samples which exhibited chloride concentrations below 10,000 mg/kg for those borings that could be drilled to depths of three to five ft bgs, including hand auger borings GWU-2, GWU-4, GWU-6, GWU-12 drilled in the flowline corridor and air rotary borings GWU-16 through GWU-19 which were drilled immediately outside of the flowline corridor.
- It is not currently practicable to remediate chloride impacted soil within the main pipeline corridor due to the following:

- Excavation of impacted soil within the pipeline corridor carries a health and safety risk, as well as the risk of additional releases of COCs to the environment, due to the potential for ruptured flowlines during excavation activities; and
- Remediation of impacted soil would not be effective in the flowline corridor because a large portion of the affected soil would have to be left in place to prevent damage to the existing flowlines during excavation. Remediation in the flowline corridor will be substantially more effective once most, if not all, of the flowlines have been removed.

- Deferring remediation/reclamation of the affected soil would not result in a significant threat to human health or the environment, even if the concentration of 12,500 mg/kg reported for sample GWU-07-0-1 is not remediated immediately. United States Environmental Protection Agency's (USEPA) *ProUCL, Version 5.1* software was used to calculate statistical chloride exposure point concentrations for the flowline corridor area using the data obtained during this assessment. The statistical evaluation included calculation of the 95% Upper Confidence Level (95% UCL) for chloride concentrations for comparison with the remediation limit of 10,000 mg/kg. To eliminate the potential statistical bias associated with the sample locations that were placed on the edges of the flowline corridor area, a second calculation used a database that consisted of the chloride data obtained only from only those borings that exhibited at least one chloride exceedance of the 600 mg/kg reclamation standard in one of the depth interval samples. Both 95 % UCL calculations indicated chloride concentrations that are well below 10,000 mg/kg.
  - The initial calculation utilizing chloride data from borings GWU-01 through GWU-15 resulted in a 95% Gamma Adjusted KM-UCL of 3,796 mg/kg based on the Gamma Kaplan-Meier (KM) Statistics.
  - The second calculation utilizing chloride data from borings GWU-01, 02, 04, 06, 07 and 12 resulted in a 95% Adjusted Gamma UCL of 6,002 mg/kg based on the Gamma Statistics.

1. Introduction

On behalf of Chevron Mid-Continent Business Unit (MCBU), AECOM Technical Services, Inc. (AECOM) has prepared this Site Assessment Report and Remediation Plan to address constituent of concern (COC) impacts to soil resulting from a produced water spill that occurred at the Vacuum Glorietta West Unit (VGWU) site in Lea County, New Mexico ("the Site").

2. Background

The Site is located at Latitude 32.786537 North, Longitude 103.512692 West in Lea County, New Mexico (**Figure 1**). The reported spill location lies within a significant flowline corridor immediately west of the Chevron CO2 Plant in the Vacuum Field (**Figure 2**). This pipeline corridor encompasses an area of about 750 feet (ft) north to south and 250 – 350 ft east to west. The pipeline corridor contains mostly north-south trending surface/subsurface flowlines, but also contains east-west and northwest-southeast trending surface/subsurface flowlines that appear to be associated with the CO2 Plant to the east.

AECOM understands that, on October 26, 2018, approximately 155.1 barrels (bbls) of produced water, with a dissolved chloride concentration greater than 10,000 milligrams per liter (mg/L), occurred at the Site as the result of internal corrosion of a buried transfer line. As required by the New Mexico Oil Conservation Division (NMOCD) under 19.15.29 New Mexico Administrative Code (NMAC), Chevron's initial response to the release included:

- Stopping the release at the source;
- Securing the impacted soil area to protect human health and the environment;
- Containing the released produced water; and
- Recovering approximately 130 bbls of produced water.

A Release Notification, Form C-141, dated November 6, 2018, was submitted to the NMOCD. The Form C-141 documents the responsible party, location of the release source, nature and volume of the release, and initial response to the release. NMOCD assigned Incident ID NCH1832058269 to the release. An updated Form C-141 is provided as **Appendix A**.

3. Initial Site Assessment/Characterization

The findings from an initial assessment/characterization of the Site are summarized below.

- Based on an online Water Column/Average Depth to Water Report from the New Mexico Water Rights Reporting System (NMWRRS) for wells located within 1,000 meters (about 3,281 ft) of the Site, the shallowest potential depth to groundwater beneath the Site is 90 ft below ground surface (ft bgs) and the average depth to groundwater is 129 ft bgs. A copy of the Water Column/Average Depth to Water Report is attached as Appendix B.
- The underlying soils at the Site are comprised of gravelly loam down to 10 inches, caliche from 10-80 inches, and it currently seems unlikely that the release of approximately 25 bbls of unrecovered produced water resulted in chloride impact to groundwater. Soil sampling has been conducted to characterize potential chloride and petroleum hydrocarbon impacts to the Site.
- There are no continuously flowing watercourses or other significant watercourses within 300 ft of the Site.
- The Site is not located within 200 ft of any lakebed, known sinkhole, or playa lake.

- The nearest occupied permanent residence, school, hospital, institution, or church is over 10 miles from the Site.
- There are no springs or wells used for domestic or stock watering purposes within 500 ft of the Site.
- There are no fresh water wells or springs within 1,000 ft of the Site.
- No incorporated municipal boundaries or defined municipal fresh water well fields are located within 10 miles of the Site.
- No wetlands are present within 300 ft of the Site.
- No subsurface mines are located beneath the Site.
- No karst geology features or other unstable areas are known to be located near the Site.
- A 100-year floodplain was not identified near the Site.
- All operations near the Site are for oil and gas exploration, development, production, or storage only, and no impact to areas that are not on an exploration, development, production, or storage site are expected.
- **Figure 1** shows the location of the Site and surrounding area on an aerial photograph. Based on information obtained during the initial desktop assessment/characterization and the volume of produced water released and recovered, no impact to groundwater, surface water, springs, or other sources of fresh water is currently suspected.

4. Soil Assessment

Due to drilling rig accessibility limitations associated with the presence of numerous surface/subsurface flowlines constructed of various materials (polyethylene, steel and fiberglass), hand auger borings were advanced for collection of initial shallow soil samples at the Site. Initial sampling activities included collection of shallow soil samples from hand auger borings GWU-01 through GWU-08 in June 2019 and from hand auger borings GWU-09 through GWU-15 in September 2019 (**Figure 3**). The hand auger borings were advanced to depths ranging from one to four feet below ground surface (ft bgs) and were terminated due to auger refusal in shallow caliche. At each of the locations where samples could only be collected to a depth of one ft bgs, three or four additional attempts were made to advance the borings deeper in other nearby spots. However, even after drilling was attempted at additional spots, the hand auger borings could not be advanced below a depth of one ft bgs in the locations for borings GWU-01, GWU-07, GWU-08, GWU-09, GWU-10, GWU-11, GWU-14 and GWU-15.

On June 19, 2020, air rotary drilling equipment was used to advance borings GWU-16, GWU-17 and GWU-19 to depths of five ft bgs. Boring GWU-18 was advanced to a depth of 51 ft bgs to demonstrate that groundwater is not present within the upper 50 ft bgs beneath the Site. Based on drilling rig accessibility, air rotary borings GWU-16 through GWU-19 were drilled immediately outside of the pipeline corridor area for horizontal and vertical delineation purposes.

Dark brown and tan silty sand and caliche were generally observed from the surface to 5 ft bgs in the hand auger borings and shallow air rotary borings. In boring GWU-18, this material was underlain by dry silty sand, with a caliche seam being present from about 18 to 20 ft bgs and gravel being present at about 35 ft bgs, which was observed to decrease with depth below about 40 ft bgs. No groundwater was observed in GWU-18 to the total depth of the boring at 51 ft bgs. The field soil boring log for GWU-18 is provided as **Appendix D**.

Soil samples were collected from each of the borings and field-screened for petroleum hydrocarbons using a photoionization detector (PID) to measure volatile organic vapor concentrations and an electrical conductivity probe to screen for elevated chloride concentrations. A Summary of Field Sample Collection and Screening Activities is provided as **Appendix E**.

The soil samples were collected in one ft depth intervals and transferred into clean, laboratory-provided sample containers, labeled and placed on ice in laboratory-provided coolers. Chain of Custody forms were completed and the samples were .shipped to the ALS Laboratory in Houston, Texas for analysis of benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8260C, total petroleum hydrocarbons (TPH) by EPA Method 8015M and chloride by EPA Method 9056A. The laboratory results are summarized in **Table 1** and the laboratory analytical report is provided as **Appendix F**.

Each of the one ft depth interval samples (collected from zero to five ft bgs, where possible) from the borings were submitted for laboratory analysis of chloride. Based on PID field screening results, one depth interval sample was also submitted for laboratory analysis of BTEX and TPH for each of the borings except GWU-1, GWU-3, GWU-7 and GWU-8, which were only drilled to one to two ft bgs.

At the conclusion of drilling and soil sampling activities, the soil cuttings were returned to the boreholes, which were then sealed near the surface with bentonite chips.

4.1 Soil Sampling Results

The soil analytical results were initially compared to *Table I, Closure Criteria for Soils Impacted by a Release* provided in 19.15.29.12 NMAC, which includes the following:

Table I
Closure Criteria for Soils Impacted by a Release

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/L TDS	Constituent	Limit (mg/kg)
All depths	Benzene	10
	Total BTEX	50
≤ 50 ft bgs	Chloride	600
	TPH (GRO+DRO+MRO)	100
51 – 100 ft bgs	Chloride	10,000
	TPH (GRO+DRO+MRO)	2,500
>100 ft bgs	Chloride	20,000
	TPH (GRO+DRO+MRO)	2,500
mg/kg – milligrams per kilogram		

The regulatory limits in *Table I* above are associated with protection of sensitive receptors, which are primarily groundwater resources for this Site. As described above, no groundwater was observed to a depth of 51 ft bgs in boring GWU-18. The chloride concentration of 12,500 mg/kg reported for sample GWU-07-0-1 exceeds the *Table I* regulatory limits where groundwater depth is 51 to 100 ft bgs. No other samples exhibited COC concentrations above the applicable regulatory limits listed in *Table I*.

The laboratory analytical results were also compared to the reclamation requirements for the upper four feet of soil under 19.15.29.13.D.(1) NMAC, which states, *"The reclamation must contain a minimum of four feet of non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0, or other test methods approved by the division."*

Although not described under 19.15.29 NMAC, the NMOC further clarified soil reclamation requirements in a document entitled *Procedures for Implementation of the Spill Rule (19.15.29)*, September 6, 2019. This document says, *the word "uncontaminated" means soils not only with a chloride concentration of less than 600 mg/kg, but also a TPH concentration of no more than 100 mg/kg, a total BTEX concentration of no more than 50 mg/kg, and a benzene concentration of no more than 10 mg/kg*. This

clarification means that all soil to a depth of four ft bgs is subject to the *Table I* standards for sites where groundwater is present at a depth of less than 50 ft bgs, regardless of the actual depth to groundwater.

None of the laboratory analytical results indicated BTEX and/or TPH concentrations that exceeded the soil reclamation standards described above. Chloride concentrations exceeded the reclamation standard of 600 mg/kg in samples collected from borings GWU-01, GWU-02, GWU-04, GWU-06, GWU-07 and GWU-12 .

The chloride analytical results for borings GWU-09, GWU-10 and GWU-15 are below the chloride reclamation standard of 600 mg/kg and indicative of potential horizontal delineation of impacted soil to the east of the spill location, and within the flowline corridor area. The chloride results for borings GWU- 13 and GWU-14 are indicative of potential horizontal delineation of impacted soil to the west of the spill location, and within the flowline corridor area. However, none of these hand auger borings could be advanced past 2 ft bgs due to auger refusal associated with shallow caliche. Therefore, borings GWU-16 through GWU-19 were advanced to depths of five ft bgs at four locations just outside of the pipeline corridor area using air rotary drilling methods. The laboratory analytical result for samples collected from GWU-16 through GWU-19 indicate chloride, BTEX and TPH concentrations below soil reclamation standards, thus delineating the horizontal extent of impacted soil to locations just outside of the pipeline corridor area in which the spill occurred.

The laboratory analytical results for the soil assessment samples are summarized in **Table 1** and on **Figure 2**. The laboratory analytical report is provided in **Appendix F**.

5. Remediation Plan

Future Site remediation activities will be conducted to address the following regulatory requirements applicable to the site:

- Soil remediation requirements in *Table I, Closure Criteria for Soils Impacted by a Release* provided in 19.15.29.12 NMAC; and
- Soil reclamation requirements under 19.15.29.13.D.(1) NMAC.

5.1 Proposed Soil Remediation/Reclamation Approach

Based on the analytical results for borings GWU-02, GWU-04, GWU-06 and GWU-12, which exhibited chloride concentrations in excess of 600 mg/kg to depths of three to four ft bgs, it is currently assumed that **future remediation of impacted soil to a depth of four ft bgs will be required**, potentially in an area as large as the area defined by borings GWU-16 through GWU-19 (**Figure 4**).

Chevron MCBU requests NMOCD approval for deferral of remediation/reclamation of chloride-impacted soil in accordance with 19.15.29.12(C)(2), based on the following:

- Chloride was the only COC that exceeds the applicable regulatory limits. The horizontal extent of chloride in soil is delineated based on the sampling results for borings GWU-16 through GWU-19.
- The chloride concentration of 12,500 mg/kg reported for sample GWU-07-0-1 exceeds the *Table I* regulatory limit of 10,000 mg/kg where groundwater depth is 51 to 100 ft bgs. Vertical delineation was not achieved in the exact location of sample location GWU-07 due to the shallow depth of hand auger refusal in caliche and safety concerns associated with driving a large drilling rig over numerous surface flowlines. However, the bottom samples exhibited chloride concentrations below 10,000 mg/kg for those borings that could be drilled to depths of three to five ft bgs, including hand auger borings GWU-2, GWU-4, GWU-6, GWU-12 drilled in the flowline corridor and air rotary borings GWU-16 through GWU-19 which were drilled immediately outside of the flowline corridor.
- It is not currently practicable to remediate chloride impacted soil within the main pipeline corridor due to the following:

  - Excavation of impacted soil within the pipeline corridor carries a health and safety risk, as well as the risk of additional releases of COCs to the environment, due to the potential for ruptured flowlines during excavation activities; and
  - Remediation of impacted soil would not be effective in the flowline corridor because a large portion of the affected soil would have to be left in place to prevent damage to the existing flowlines during excavation. Remediation in the flowline corridor will be substantially more effective once most, if not all, of the flowlines have been removed.

- Deferring remediation/reclamation of the affected soil would not result in a significant threat to human health or the environment, even if the concentration of 12,500 mg/kg reported for sample GWU-07-0-1 is not remediated immediately. United States Environmental Protection Agency's (USEPA) *ProUCL, Version 5.1* software was used to calculate statistical chloride exposure point concentrations for the flowline corridor area using the data obtained during this assessment. The statistical evaluation included calculation of the 95% Upper Confidence Level (95% UCL) for chloride concentrations for comparison with the remediation limit of 10,000 mg/kg. The initial calculation used a database that consisted of all of the chloride data collected from the hand auger borings that were advanced to depths of one to four ft bgs within the flowline corridor area. To eliminate the potential statistical bias associated with the sample locations that were placed on the edges of the flowline corridor area, a second calculation used a database that consisted of the chloride data obtained only from only those borings that exhibited at least one chloride exceedance of the 600 mg/kg reclamation standard in one of the depth interval samples. Both 95 % UCL calculations indicated chloride concentrations that are well below 10,000 mg/kg.

  - The initial calculation utilizing chloride data from borings GWU-01 through GWU-15 resulted in a 95% Gamma Adjusted KM-UCL of 3,796 mg/kg based on the Gamma Kaplan-Meier (KM) Statistics.
  - The second calculation utilizing chloride data from borings GWU-01, 02, 04, 06, 07 and 12 resulted in a 95% Adjusted Gamma UCL of 6,002 mg/kg based on the Gamma Statistics.

Both 95 % UCL calculations indicated chloride concentrations that are well below 10,000 mg/kg including the more conservative second calculation. The EPA ProUCL 95% Upper Confidence Limits (UCL) software input and output is included in **Appendix G**.

5.2 Soil Excavation and Confirmation Sampling associated with Future Site Remediation/Reclamation

Once most, if not all of the flowlines are taken out of service and removed from the flowline corridor, remediation/reclamation will be performed by excavation and off-site disposal of impacted soil. The excavated soil will be transported off site for disposal at a Chevron approved waste disposal facility that accepts oil and gas exploration and production (E&P) exempt wastes.

In conjunction with excavation of impacted soil, confirmation samples will be collected from the walls and bottom of the excavation according to NMOCD requirements. The soil samples will be submitted for laboratory analysis of chloride by EPA Method 9056A or Method 9250. The soil samples will be collected in clean, laboratory-provided sample containers, labeled, and placed on ice in laboratory-provided coolers. AECOM will complete Chain of Custody forms and arrange for shipment/transportation of the samples to AECOM's subcontractor, ALS Laboratory in Houston, Texas.

Confirmation soil samples may initially be collected upon completion of soil excavation in the *Initial Confirmation Sample Area* shown on **Figure 4**. Excavation activities will be extended as necessary until confirmation sample results are within the required regulatory limits.

5.3 Site Closure Report

Upon completion of soil remediation/reclamation activities, a Site Closure Report will be submitted to the NMOCD describing the soil excavation and disposal activities, and the closure confirmation sampling results.

6. Schedule

No further action is recommended at this time. The schedule for future soil remediation/reclamation will be determined once the production equipment in the impacted area has been taken out of service.

7. References

New Mexico Water Rights Reporting System (NMWRRS), Water Column/Average Depth to Water Report. http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html

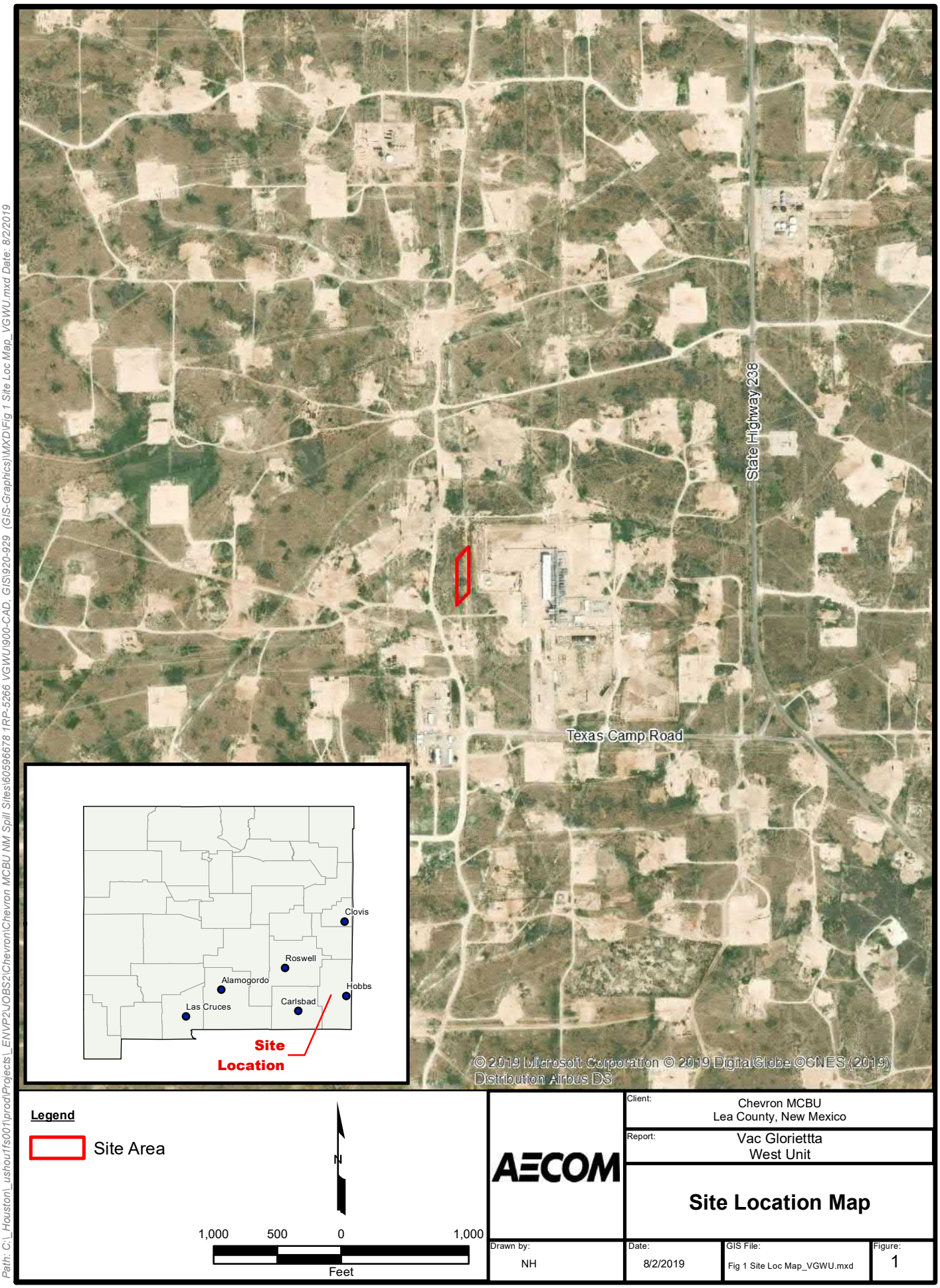
National Wetlands Inventory, Surface Waters and Wetlands. https://www.fws.gov/wetlands/data/mapper.html

Google Earth Pro

United States Department of Agriculture – Natural Resources Conservation Service. Web Soil Survey. Available on line at https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

United States Environmental Protection Agency (USEPA) ProUCL Software, Version 5.1. https://www.epa.gov/land-research/proucl-software

Figures



Client:	Chevron MCBU Lea County, New Mexico
Report:	Vac Glorietta West Unit
	Site Location Map

Drawn by:	Date:	GIS File:	Figure:
NH	8/2/2019	Fig 1 Site Loc Map_VGWU.mxd	1

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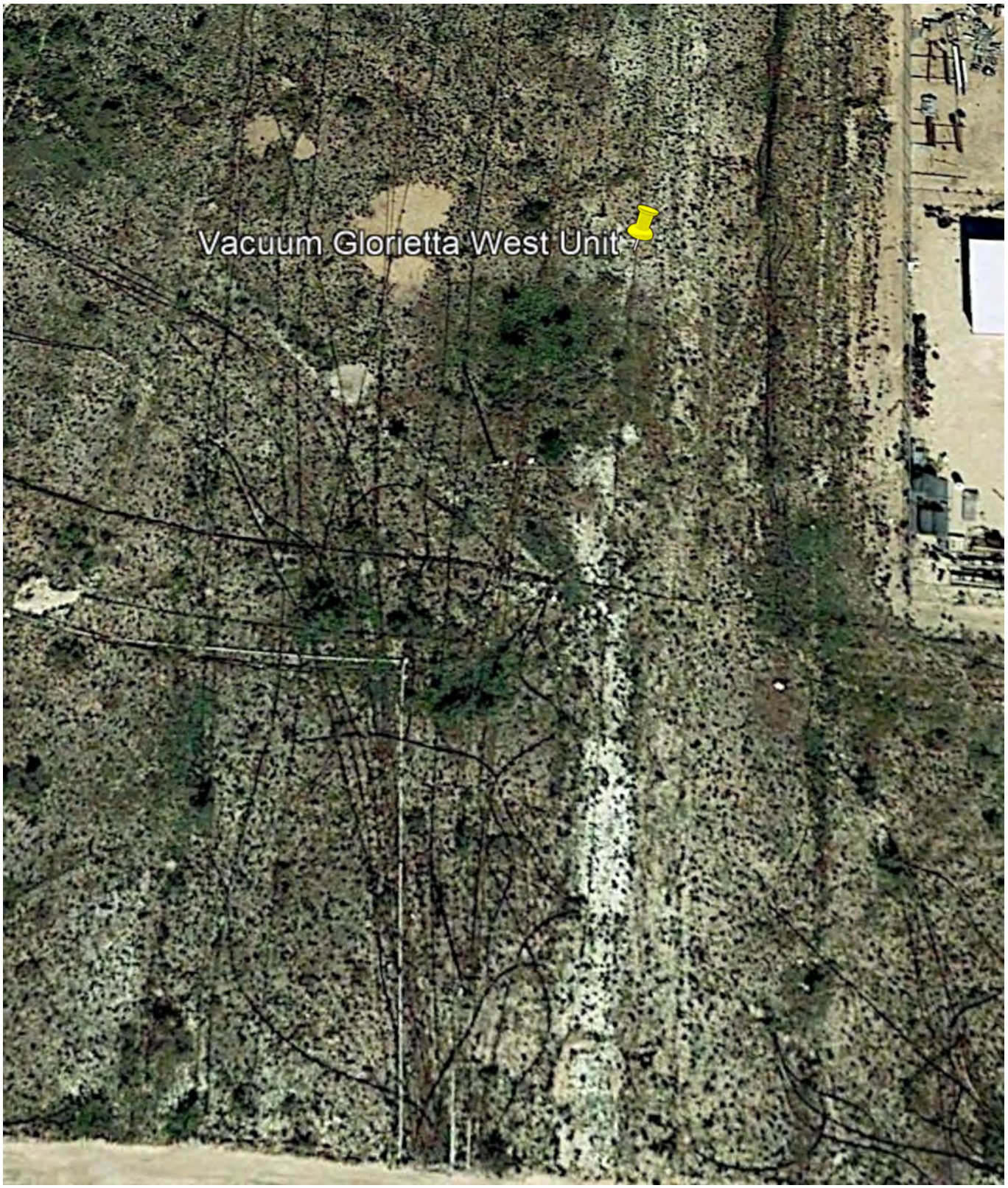

Legend

N

1,000 500 0 1,000

Feet

AECOM

Client:	Chevron MCBU Lea County, New Mexico
Report:	Vac Gloriettta West Unit
	Site Layout Map

Drawn by:	Date:	GIS File:	Figure:
NH	8/2/2019	Fig 1 Site Loc Map_VGWU.mxd	2

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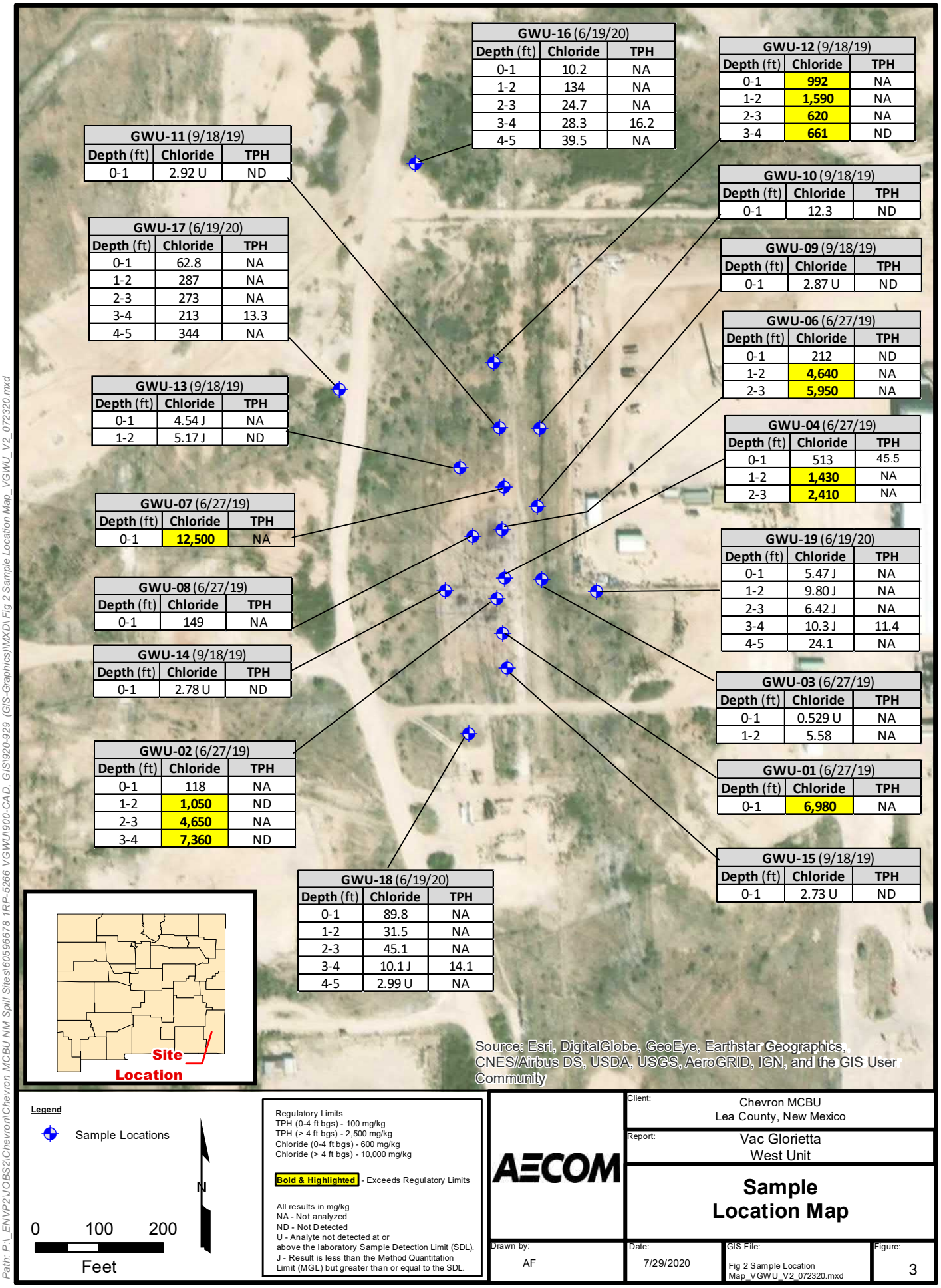
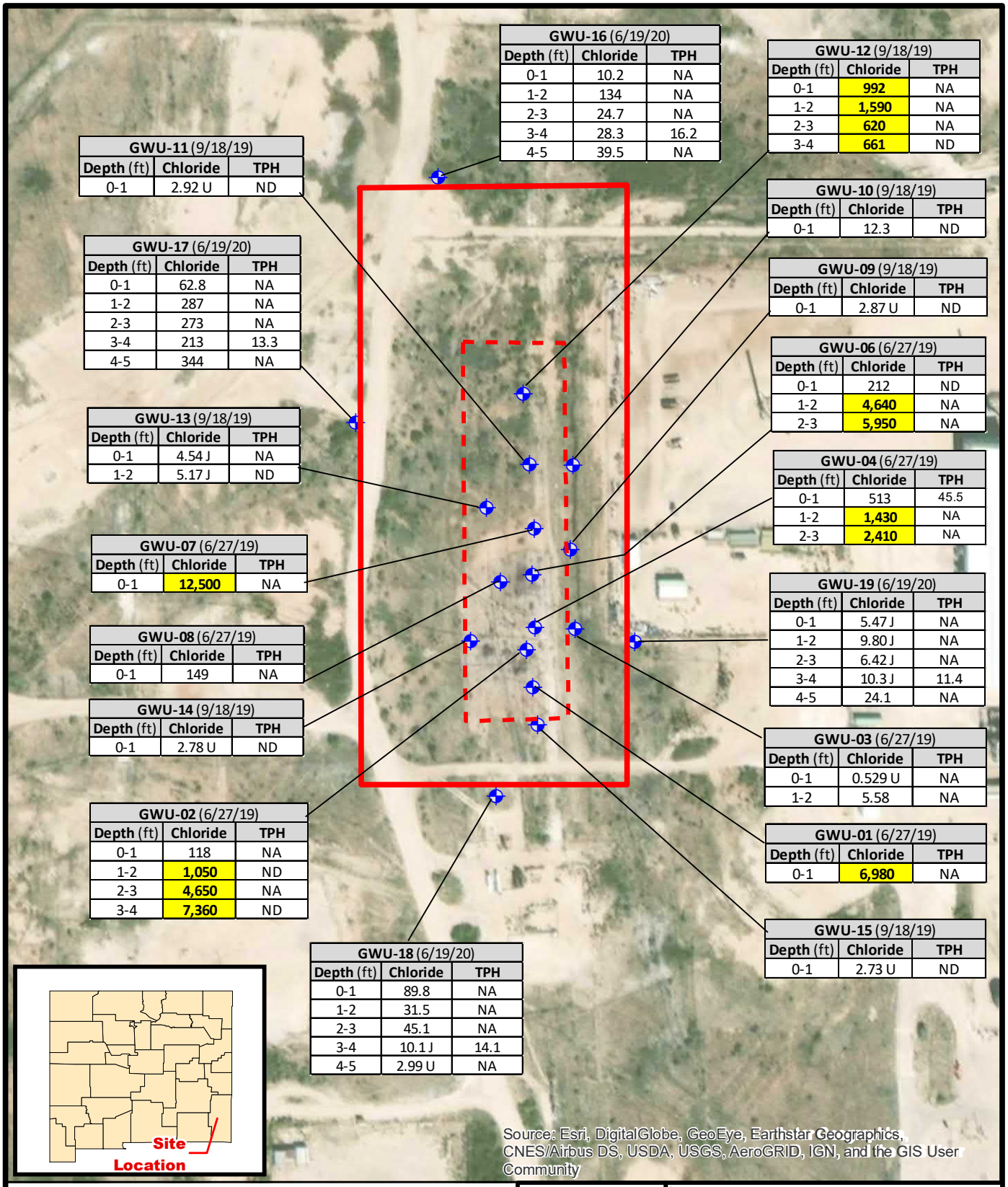

GWU-16 (6/19/20)
Depth (ft) | Chloride | TPH
0-1 | 10.2 | NA
1-2 | 134 | NA
2-3 | 24.7 | NA
3-4 | 28.3 | 16.2
4-5 | 39.5 | NA
GWU-12 (9/18/19)
Depth (ft) | Chloride | TPH
0-1 | 992 | NA
1-2 | 1,590 | NA
2-3 | 620 | NA
3-4 | 661 | ND
GWU-11 (9/18/19)
Depth (ft) | Chloride | TPH
0-1 | 2.92 U | ND
GWU-10 (9/18/19)
Depth (ft) | Chloride | TPH
0-1 | 12.3 | ND
GWU-17 (6/19/20)
Depth (ft) | Chloride | TPH
0-1 | 62.8 | NA
1-2 | 287 | NA
2-3 | 273 | NA
3-4 | 213 | 13.3
4-5 | 344 | NA
GWU-09 (9/18/19)
Depth (ft) | Chloride | TPH
0-1 | 2.87 U | ND
GWU-06 (6/27/19)
Depth (ft) | Chloride | TPH
0-1 | 212 | ND
1-2 | 4,640 | NA
2-3 | 5,950 | NA
GWU-13 (9/18/19)
Depth (ft) | Chloride | TPH
0-1 | 4.54 J | NA
1-2 | 5.17 J | ND
GWU-04 (6/27/19)
Depth (ft) | Chloride | TPH
0-1 | 513 | 45.5
1-2 | 1,430 | NA
2-3 | 2,410 | NA
GWU-07 (6/27/19)
Depth (ft) | Chloride | TPH
0-1 | 12,500 | NA
GWU-19 (6/19/20)
Depth (ft) | Chloride | TPH
0-1 | 5.47 J | NA
1-2 | 9.80 J | NA
2-3 | 6.42 J | NA
3-4 | 10.3 J | 11.4
4-5 | 24.1 | NA
GWU-08 (6/27/19)
Depth (ft) | Chloride | TPH
0-1 | 149 | NA
GWU-14 (9/18/19)
Depth (ft) | Chloride | TPH
0-1 | 2.78 U | ND
GWU-03 (6/27/19)
Depth (ft) | Chloride | TPH
0-1 | 0.529 U | NA
1-2 | 5.58 | NA
GWU-02 (6/27/19)
Depth (ft) | Chloride | TPH
0-1 | 118 | NA
1-2 | 1,050 | ND
2-3 | 4,650 | NA
3-4 | 7,360 | ND
GWU-01 (6/27/19)
Depth (ft) | Chloride | TPH
0-1 | 6,980 | NA
GWU-15 (9/18/19)
Depth (ft) | Chloride | TPH
0-1 | 2.73 U | ND
GWU-18 (6/19/20)
Depth (ft) | Chloride | TPH
0-1 | 89.8 | NA
1-2 | 31.5 | NA
2-3 | 45.1 | NA
3-4 | 10.1 J | 14.1
4-5 | 2.99 U | NA
Site Location
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Legend
Sample Locations
N
0 100 200
Feet
Regulatory Limits
TPH (0-4 ft bgs) - 100 mg/kg
TPH (> 4 ft bgs) - 2,500 mg/kg
Chloride (0-4 ft bgs) - 600 mg/kg
Chloride (> 4 ft bgs) - 10,000 mg/kg
Bold & Highlighted - Exceeds Regulatory Limits
All results in mg/kg
NA - Not analyzed
ND - Not Detected
U - Analyte not detected at or above the laboratory Sample Detection Limit (SDL).
J - Result is less than the Method Quantitation Limit (MGL) but greater than or equal to the SDL.
AECOM
Client: Chevron MCBU
Lea County, New Mexico
Report: Vac Glorietta West Unit
Sample Location Map
Drawn by: AF
Date: 7/29/2020
GIS File: Fig 2 Sample Location Map_VGWU_V2_072320.mxd
Figure: 3
Path: P:_ENVP2\OBS2\Chevron\Chevron MCBU NM Spill Sites\60596678 1RP-5266 VGWU\900-CAD, GIS\920-929 (GIS-Graphics)\MXD\ Fig 2 Sample Location Map_VGWU_V2_072320.mxd



Document Path: P:_ENVP2\JOBS2\Chevron\Chevron MCBU NM Spill Sites\60596678 1RP-5266 VGWU\900-CAD, GIS\920-929 (GIS-Graphics)\MXD\Fig 2 Sample Location Map_VGWU_V2_082020.mxd

Legend
- Sample Locations
- Potential Soil Remediation/Reclamation Area
- Initial Confirmation Sample Collection Area

0 100 200
Feet

N

Regulatory Limits
TPH (0-4 ft bgs) - 100 mg/kg
TPH (> 4 ft bgs) - 2,500 mg/kg
Chloride (0-4 ft bgs) - 600 mg/kg
Chloride (> 4 ft bgs) - 10,000 mg/kg

Bold & Highlighted - Exceeds Regulatory Limits

All results in mg/kg
NA - Not analyzed
ND - Not Detected
U - Analyte not detected at or above the laboratory Sample Detection Limit (SDL).
J - Result is less than the Method Quantitation Limit (MGL) but greater than or equal to the SDL.

AECOM

Client: Chevron MCBU
Lea County, New Mexico

Report: Vac Glorietta West Unit

Soil Remediation/ Reclamation Map

Drawn by:	Date:	GIS File:	Figure:
AF	8/20/2020	Fig 2 Sample Location Map_VGWU_V2_082020.mxd	4

Tables

Table 1
Soil Analytical Results
Vac Glorietta West Unit
New Mexico

Sample ID	Sample Date	Sample Depth (ft bgs)	Total Petroleum Hydrocarbons (EPA 8015B)				Volatile Organics (EPA 8260B)				Chloride (Method 9056A)
			GRO C6-C10	DRO C10-C28	MRO C28-C36	TPH GRO+DRO+MRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	
Regulatory Limits		***0 - 4***	*--*	*--*	*--*	***100***	***10***	*--*	*--*	*--*	***600***
		> 4	*--*	*--*	*--*	***2,500***	*--*	*--*	*--*	*--*	***10,000***
GWU-01	06/27/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**6,980**
GWU-02	06/27/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**118**
		1-2	0.0629 U	35.1 U	35.1 U	ND	0.000525 U	0.00115 U	0.000850 U	0.000942 U	**1,050**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**4,650**
		3-4	0.0636 U	33.2 U	33.2 U	ND	0.000494 U	0.00108 U	0.000799 U	0.000886 U	**7,360**
GWU-03	06/27/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	0.529 U
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**5.58**
GWU-04	06/27/19	0-1	0.0642 U	**45.5 J**	35.1 U	**45.5**	0.000509 U	0.00111 U	0.000824 U	0.000913 U	**513**
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**1,430**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**2,410**
GWU-06	06/27/19	0-1	0.0648 U	35.6 U	35.6 U	ND	0.000476 U	0.00104 U	0.000770 U	0.000853 U	**212**
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**4,640**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**5,950**
GWU-07	06/27/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**12,500**
GWU-08	06/27/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**149**
GWU-09	09/18/19	0-1	0.011 U	NA	NA	ND	0.00052 U	0.00062 U	0.00072 U	0.0010 U	2.87 U
GWU-10	09/18/19	0-1	0.011 U	NA	NA	ND	0.00050 U	0.00060 U	0.00070 U	0.0010 U	**12.3**
GWU-11	09/18/19	0-1	0.01 U	NA	NA	ND	0.00050 U	0.00060 U	0.00070 U	0.0010 U	2.92 U
GWU-12	09/18/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**992**
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**1,590**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**620**
		3-4	0.012 U	NA	NA	ND	0.00058 U	0.00069 U	0.00081 U	0.0012 U	**661**
GWU-13	09/18/19	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**4.54 J**
		1-2	0.011 U	NA	NA	ND	0.00052 U	0.00062 U	0.00073 U	0.0010 U	**5.17 J**
GWU-14	09/18/19	0-1	0.011 U	NA	NA	ND	0.00052 U	0.00062 U	0.00073 U	0.0010 U	2.78 U
GWU-15	09/18/19	0-1	0.01 U	NA	NA	ND	0.00050 U	0.00060 U	0.00070 U	0.00099 U	2.73 U
GWU-16	06/19/20	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**10.2**
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**134**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**24.7**
		3-4	0.011 U	**5.2**	**11**	**16.2**	0.00051 U	0.00061 U	0.00071 U	0.0010 U	**28.3**
		4-5	NA	NA	NA	NA	NA	NA	NA	NA	**39.5**

Table 1
Soil Analytical Results
Vac Glorietta West Unit
New Mexico

GWU-17	06/19/20	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**62.8**
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**287**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**273**
		3-4	0.011 U	**1.3 J**	**12**	**13.3**	0.00057 U	0.00068 U	0.00079 U	0.0011 U	**213**
		4-5	NA	NA	NA	NA	NA	NA	NA	NA	**344**
GWU-18	06/19/20	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**89.8**
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**31.5**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**45.1**
		3-4	0.011 U	**4.6**	**9.5**	**14.1**	0.00051 U	0.00062 U	0.00072 U	0.0010 U	**10.1 J**
		4-5	NA	NA	NA	NA	NA	NA	NA	NA	2.99 U
GWU-19	06/19/20	0-1	NA	NA	NA	NA	NA	NA	NA	NA	**5.47 J**
		1-2	NA	NA	NA	NA	NA	NA	NA	NA	**9.80 J**
		2-3	NA	NA	NA	NA	NA	NA	NA	NA	**6.42 J**
		3-4	0.011 U	**3.5**	**7.9**	**11.4**	0.00051 U	0.00062 U	0.00072 U	0.0010 U	**10.3 J**
		4-5	NA	NA	NA	NA	NA	NA	NA	NA	**24.1**

Notes:

1. Soil analyses performed by TestAmerica Laboratories, Inc. and ALS Houston in Houston, Texas.
2. Units for all analytical data provided are mg/Kg (milligrams per kilogram).
3. GRO - Gasoline Range Organic Compounds
4. DRO - Diesel Range Organic Compounds
5. MRO - Motor Oil/Lube Range Organic Compounds
6. Regulatory Limits are from 19.15.29 New Mexico Administrative Code (NMAC).
7. NA - Not analyzed.
8. ND - Not detected.
9. J - Indicates that the result is less than the Method Quantitation Limit (MQL) but greater than or equal to the Sample Detection Limit (SDL).
10. U - Indicates that the analyte was analyzed but not detected at or above the laboratory SDL.
11. **Bold** - Detectable concentration that exceeds laboratory method reporting limits.
12. **Bold and Shaded** - Reported concentration exceeds Regulatory Limits.
13. ft bgs - feet below ground surface.
14. -- Indicates that no applicable regulatory limit exists for that analyte.

Appendix A

Form C-141 – Vacuum Glorietta West Unit

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NCH1832058269
District RP	1RP-5266
Facility ID	fCH1832057923
Application ID	pCH1832058382

Release Notification

Responsible Party

Responsible Party: Chevron USA Inc.	OGRID: 4323
Contact Name: Josepha DeLeon	Contact Telephone: 575-263-0424
Contact email: jdxd@chevron.com	Incident # NCH1832058269 VACUUM GLORIETTA WEST UNIT @ FCH1832057923
Contact mailing address: 1616 W. Bender Blvd., Hobbs, NM 88240	

Location of Release Source

Latitude: 32.786537 Longitude: -103.512692
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Vacuum Glorietta West Unit	Site Type: Battery
Date Release Discovered: 10/26/2018	API# *(if applicable): N/A*

Unit Letter	Section	Township	Range	County
B	1	18S	34E	Lea

Surface Owner: ☒ State ☐ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls): 155.1 barrels	Volume Recovered (bbls): 130 barrels
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release:

Buried transfer line leak due to corrosion.

3 areas measured and calculations were:
210x80 with 0.0208 standing liquid = 127.07 barrels
70x10 with 0.0208 standing liquid = 2.59 barrels
350x98 with 0.0833 in soil = 25.44 barrels

State of New Mexico
Oil Conservation Division

Incident ID	NCH1832058269
District RP	1RP-5266
Facility ID	fCH1832057923
Application ID	pCH1832058382

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? "greater than 25 barrels"
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes, by Josepha DeLeon to Maxey Brown, Olivia Yu, via email 10/27/2018.	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment.

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Josepha DeLeon Title: Environmental Compliance Specialist

Signature: JdeLeon Date: 11/6/2018

Email: jdxd@chevron.com Telephone: 575-263-0424

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

State of New Mexico
Oil Conservation Division

Incident ID	NCH1832058269
District RP	1RP-5266
Facility ID	fCH1832057923
Application ID	pCH1832058382

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	90 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

Incident ID	NCH1832058269
District RP	1RP-5266
Facility ID	fCH1832057923
Application ID	pCH1832058382

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Amy Barnhill Title: Waste and Water Specialist

Signature: Date: 9-14-20

email: ABarnhill@chevron.com Telephone: 432-687-7108

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	NCH1832058269
District RP	1RP-5266
Facility ID	fCH1832057923
Application ID	pCH1832058382

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☒ Extents of contamination must be fully delineated.

☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Amy Barnhill Title: Waste and Water Specialist

Signature: Date: 9-14-20

email: ABarnhill@chevron.com Telephone: 432-687-7108

OCD Only

Received by: Date:

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Date:

Appendix B

NMWRRS Water Column/Average Depth to Water

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number		POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 13820 POD1		L	LE	3	1	3	01	18S	34E	639472	3628296	352	150	131	19
L 13820 POD2		L	LE	3	1	3	01	18S	34E	639472	3628296	352	150	131	19
L 10467		L	LE		1	2	01	18S	34E	639365	3628137*	460	231	115	116
L 05288		L	LE		4	4	36	17S	34E	639760	3628552*	488	231	90	141
L 05288	R	L	LE		4	4	36	17S	34E	639760	3628552*	488	231	90	141
L 02722 S4		L	LE	1	2	2	01	18S	34E	639666	3628246*	521	234		
L 05843		L	LE			3	36	17S	34E	638753	3628731*	539		240	
L 02722 S5		L	LE	2	2	2	01	18S	34E	639866	3628246*	684	232		
L 06030		L	LE		3	3	36	17S	34E	638552	3628530*	723	230	102	128
L 04247 POD5		L	LE	3	1	3	31	17S	35E	640040	3628781	791	235	95	140
L 04247 POD7		L	LE	1	3	3	31	17S	35E	640054	3628747	797		240	
L 02724 S4		L	LE	3	3	3	36	17S	34E	638451	3628429*	837	230	140	90
L 07119		L	LE	1	1	1	06	18S	35E	640068	3628255*	862	233	95	138
L 06115		L	LE	1	1	1	01	18S	34E	638460	3628217*	893	230	110	120
L 02722		L	LE	3	1	1	01	18S	34E	638460	3628017*	993	229	105	124

Average Depth to Water: **129 feet**

Minimum Depth: **90 feet**

Maximum Depth: **240 feet**

Record Count: 15

UTMNAD83 Radius Search (in meters):

Easting (X): 639272.99 **Northing (Y):** 3628588.44 **Radius:** 1000

***UTM location was derived from PLSS - see Help**

Appendix C

Photographic Documentation

Client: Chevron MCBU	Project Number: 60596678
Project Name: Vacuum Glorietta West Unit	Site Location: Lea County, New Mexico

SPILL AREA	
Photograph No. 1	
Photographer: J. Lovely	
Date: 9/18/2019	
Comments: Looking east at the flowline corridor west of the Chevron CO2 Plant in the Vacuum Field.	
SPILL AREA	
Photograph No. 2	
Photographer: J. Lovely	
Date: 9/18/2019	
Comments: Looking south along the flowline corridor associated with the VGWU spill area.	

Appendix D

Field Soil Boring Log for Boring GWU - 18

AECOM

Client: Chevron
Project Number:
Site Location: Chevron Vac. Unit
Coordinates: Elevation:
Drilling Method: Air - Rotary
Sample Type(s): None Boring Diameter: 6 in
Weather: Sunny, Temps in 90's Logged By: J.L. Date/Time Started: 6/19/20
Drilling Contractor: Talon Ground Elevation: Date/Time Finished: 6/19/20

BORING ID: GWU-18
Sheet: 1 of 3
Monitoring Well Installed: ND
Screened Interval: NA
Depth of Boring: 51 ft bgs
Water Level: None

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft.)
1							Caliche, Tan to white (sandstone) Dry		
2									
3							Silty Sand, Yellow-Brown, with Caliche Nodules, Dry		
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15							Silty Sand, Reddish-Brown, Dry		
16									
17									
18									
19							Caliche - well cemented, Dry		
20									

NOTES:

Date	Time	Depth to groundwater while drilling

Checked by Date

AECOM

Client:
Project Number:
Site Location:
Coordinates: Elevation:
Drilling Method:
Sample Type(s): Boring Diameter:
Weather: Logged By: Date/Time Started:
Drilling Contractor: Ground Elevation: Date/Time Finished:

BORING ID: GWU-18
Sheet: 2 of 3
Monitoring Well Installed:
Screened Interval:
Depth of Boring:
Water Level:

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	USCS	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft.)
21							Silty Sand, Yellow-Brown, Dry		
22									
23									
24									
25							Turning more brown in color		
26									
27									
28									
29							Turning more reddish-brown in color		
30									
31									
32									
33									
34									
35							Silty Sand, Reddish-Brown, with some gravel		
36									
37									
38									
39									
40									

NOTES:

Checked by Date

Date	Time	Depth to groundwater while drilling

AECOM

Client:			BORING ID: GWU-18
Project Number:			
Site Location:			
Coordinates:		Elevation:	Sheet: 3 of 3
Drilling Method:			Monitoring Well Installed:
Sample Type(s):		Boring Diameter:	Screened Interval:
Weather:	Logged By:	Date/Time Started:	Depth of Boring:
Drilling Contractor:	Ground Elevation:	Date/Time Finished:	Water Level:

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (inches)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft.)
41							Gravel content decreasing with depth.		
42									
43									
44									
45									
46									
47									
48									
49									
50									
51							End of boring at 51 feet bgs.		
52									
53									
54									
55									
56									
57									
58									
59									
60									

NOTES:

Checked by Date

Date	Time	Depth to groundwater while drilling

Appendix E

Summary of Field Sample Collection and Screening Activities

Sample Collection and Screening
Vacuum Glorietta West Unit

Date	Boring ID	Depth (ft bgs)	Lithology	Time	PID (ppm)	Hydrocarbon Analysis (A,H?)	Conductivity Probe (µS/cm)	ChlorideTest Strip (ppm Cl⁻)	ChlorideTest Strip (%NaCl)	EC Meter (µS/cm)	Chloride Lab Result (mg/kg)	GPS
9/18/19	GWU-09	0-1	Silty Sand & Caliche, Dark Brown	1120	0.4	A	7.3	—	—	1,380		32.786536 -103.512571
		1-2										
		2-3										
		3-4										
		4-5										
9/18/19	GWU-10	0-1	Silty Sand & Caliche, Dark Brown	1135	0.3	A	2.2	—	—	865		32.786876 -103.512583
		1-2										
		2-3										
		3-4										
		4-5										
9/18/19	GWU-11	0-1	Silty Sand & Caliche, Dark Brown	1152	0.5	A	2.0	—	—	935		32.786872 -103.512699
		1-2		++								
		2-3										
		3-4										
		4-5										
9/18/19	GWU-12	0-1	Silty Sand, Dark Brown	1208	0.7		219	—	—	14,650		32.787082 -103.512700
		1-2	Silty Sand, Dark Brown	1217	0.5		573	—	—	17,300		
		2-3	Silty Sand, Reddish-Brown	1222	0.4		275	—	—	12,575		
		3-4	Silty Sand, Reddish-Brown	1233	0.5	A	205	—	—	10,200		
		4-5										
9/18/19	GWU-13	0-1	Silty Sand & Caliche, Tan	1248	0.8		4.8	—	—	350		32.786742 -103.513001
		1-2	Silty Sand & Caliche, Tan	1258	0.2	A	32.5	—	—	1,130		
		2-3										
		3-4										
		4-5										

Field Hours - James - 5
Raphael - 5

Sample Collection and Screening
Vacuum Glorietta West Unit

Date	Boring ID	Depth (ft bgs)	Lithology	Time	PID (ppm)	Hydrocarbon Analysis (A,H?)	Conductivity Probe (uS/cm)	ChlorideTest Strip (ppm Cl⁻)	ChlorideTest Strip (%NaCl)	EC Meter (uS/cm)	Chloride Lab Result (mg/kg)
9/18/19	GWU-14	0-1	Silty Sand & Caliche, Tan	1315	0.5	A	~~378~~ 3.7	—	—	370	
		1-2									
		2-3									
		3-4									
		4-5									
9/18/19	GWU-15	0-1	Silty Sand & Caliche, Tan	1331	0.4	A	2.2	—	—	610	
		1-2									
		2-3									
		3-4									
		4-5									

GPS

32.786252
-103.513089

32.785805
-103.512809

Onsite labor hours

Sample Collection and Screening
Vacuum Glorietta West Unit

Date	Boring ID	Depth (ft bgs)	Lithology	Time	PID (ppm)	Conductivity Probe (mS/cm)	EC Meter (mS/cm)
6/19/2020	GWU-16	0-1	Dark Brown Silty Sand w/ caliche nodules	1010	1.7	3.7	0.16
		1-2	Light Brown Silty Sand w/ caliche nodules	1015	1.2	13.6	0.21
		2-3	Reddish-brown silty sand w/ caliche nodules	1020	2.3	17.7	0.14
		3-4	Caliche	1025	2.6	5.2	0.12
		4-5	SAA	1030	1.8	8.9	0.17
6/19/2020	GWU-17	0-1	Dark Brown Silty Sand w/ caliche nodules	1045	2.0	13.8	0.81
		1-2	SAA	1050	3.0	26.5	0.34
		2-3	Reddish-brown silty sand	1055	1.0	32.6	0.33
		3-4	Caliche and Sandstone Lense	1100	0.5	10.3	0.22
		4-5	Yellow-Brown Silty Sand w/ caliche nodules	1105	3.1	13.8	0.21
6/19/2020	GWU-18	0-1	Caliche	1125	0.25	2.2	0.39
		1-2	Caliche and Sandstone Lense	1130	0.22	0.2	0.17
		2-3	Yellow-Brown Silty Sand w/ caliche nodules	1135	0.19	0.3	0.16
		3-4	SAA	1140	0.15	1.1	0.19
		4-5	SAA	1145	0.18	9.2	0.21
6/19/2020	GWU-19	0-1	Dark Brown Silty Sand w/ caliche nodules	1210	1.1	0.9	0.23
		1-2	Caliche and Sandstone Lense	1215	1.3	0.5	0.20
		2-3	Yellow-Brown Silty Sand	1220	1.3	10.2	0.31
		3-4	SAA	1225	1.8	10.5	0.33
		4-5	SAA	1230	1.5	9.7	0.27

Appendix F

Laboratory Analytical Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Tel: (713)690-4444

Laboratory Job ID: 600-187822-1
Client Project/Site: Glorietta West Unit

For:
AECOM
19219 Katy Freeway
Suite 100
Houston, Texas 77094

Attn: Mr. Wallace Gilmore

Authorized for release by:
7/16/2019 11:21:59 AM

Sachin Kudchadkar, Senior Project Manager
(713)690-4444
sachin.kudchadkar@testamericainc.com

Client: AECOM
Project/Site: Glorietta West Unit

Laboratory Job ID: 600-187822-1

Table of Contents

Case Narrative

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Job ID: 600-187822-1

Laboratory: Eurofins TestAmerica, Houston

Narrative

Job Narrative
600-187822-1

Comments
No additional comments.

Receipt
The samples were received on 6/28/2019 9:56 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.7° C.

Receipt Exceptions

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Industrial Hygiene
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL HOU
8015B	Gasoline Range Organics - (GC)	SW846	TAL CAN
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL CAN
9056A	Anions, Ion Chromatography	SW846	TAL HOU
3546	Microwave Extraction	SW846	TAL CAN
5030A	Purge and Trap	SW846	TAL CAN
5035	Closed System Purge & Trap/Laboratory Preservation	SW846	TAL HOU
DI Leach	Deionized Water Leaching Procedure (Routine)	ASTM	TAL HOU

Protocol References:

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Sample Summary

Client: AECOM
Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
600-187822-1	GWU-01-0-1	Solid	06/27/19 07:58	06/28/19 09:56	
600-187822-2	GWU-02-0-1	Solid	06/27/19 08:05	06/28/19 09:56	
600-187822-3	GWU-02-1-2	Solid	06/27/19 08:12	06/28/19 09:56	
600-187822-4	GWU-02-2-3	Solid	06/27/19 08:19	06/28/19 09:56	
600-187822-5	GWU-02-3-4	Solid	06/27/19 08:29	06/28/19 09:56	
600-187822-6	GWU-03-0-1	Solid	06/27/19 08:41	06/28/19 09:56	
600-187822-7	GWU-03-1-2	Solid	06/27/19 08:46	06/28/19 09:56	
600-187822-8	GWU-04-0-1	Solid	06/27/19 08:53	06/28/19 09:56	
600-187822-9	GWU-04-1-2	Solid	06/27/19 09:01	06/28/19 09:56	
600-187822-10	GWU-04-2-3	Solid	06/27/19 09:08	06/28/19 09:56	
600-187822-11	GWU-06-0-1	Solid	06/27/19 09:34	06/28/19 09:56	
600-187822-12	GWU-06-1-2	Solid	06/27/19 09:39	06/28/19 09:56	
600-187822-13	GWU-06-2-3	Solid	06/27/19 09:46	06/28/19 09:56	
600-187822-14	GWU-07-0-1	Solid	06/27/19 09:57	06/28/19 09:56	
600-187822-15	GWU-08-0-1	Solid	06/27/19 10:09	06/28/19 09:56	

Client Sample Results

Client: AECOM
Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Client Sample ID: GWU-01-0-1
Lab Sample ID: 600-187822-1
Date Collected: 06/27/19 07:58
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6980		80.0	10.7	mg/Kg			07/02/19 14:54	20

Client Sample ID: GWU-02-0-1
Lab Sample ID: 600-187822-2
Date Collected: 06/27/19 08:05
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	118		8.00	1.07	mg/Kg			07/05/19 19:27	2

Client Sample ID: GWU-02-1-2
Lab Sample ID: 600-187822-3
Date Collected: 06/27/19 08:12
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000525	U	0.00417	0.000525	mg/Kg		06/28/19 15:00	07/01/19 15:02	1
Ethylbenzene	0.000850	U	0.00417	0.000850	mg/Kg		06/28/19 15:00	07/01/19 15:02	1
Toluene	0.00115	U	0.00417	0.00115	mg/Kg		06/28/19 15:00	07/01/19 15:02	1
Xylenes, Total	0.000942	U	0.00417	0.000942	mg/Kg		06/28/19 15:00	07/01/19 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*61 - 130*	*06/28/19 15:00*	*07/01/19 15:02*	*1*
Dibromofluoromethane	*86*		*68 - 140*	*06/28/19 15:00*	*07/01/19 15:02*	*1*
Toluene-d8 (Surr)	*77*		*50 - 130*	*06/28/19 15:00*	*07/01/19 15:02*	*1*
4-Bromofluorobenzene	*94*		*57 - 140*	*06/28/19 15:00*	*07/01/19 15:02*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	62.9	U	98.0	62.9	ug/Kg		07/05/19 14:10	07/05/19 21:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*62*		*43 - 120*	*07/05/19 14:10*	*07/05/19 21:10*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	35.1	U	50.8	35.1	mg/Kg		07/10/19 12:12	07/12/19 23:14	1
C28-C36	35.1	U	50.8	35.1	mg/Kg		07/10/19 12:12	07/12/19 23:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*77*		*26 - 125*	*07/10/19 12:12*	*07/12/19 23:14*	*1*

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1050		40.0	5.34	mg/Kg			07/08/19 14:09	10

Client Sample Results

Client: AECOM
Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Client Sample ID: GWU-02-2-3
Lab Sample ID: 600-187822-4
Date Collected: 06/27/19 08:19
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4650		199	26.6	mg/Kg			07/08/19 18:51	50

Client Sample ID: GWU-02-3-4
Lab Sample ID: 600-187822-5
Date Collected: 06/27/19 08:29
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000494	U	0.00392	0.000494	mg/Kg		06/28/19 15:00	07/01/19 15:26	1
Ethylbenzene	0.000799	U	0.00392	0.000799	mg/Kg		06/28/19 15:00	07/01/19 15:26	1
Toluene	0.00108	U	0.00392	0.00108	mg/Kg		06/28/19 15:00	07/01/19 15:26	1
Xylenes, Total	0.000886	U	0.00392	0.000886	mg/Kg		06/28/19 15:00	07/01/19 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*61 - 130*	*06/28/19 15:00*	*07/01/19 15:26*	*1*
Dibromofluoromethane	*88*		*68 - 140*	*06/28/19 15:00*	*07/01/19 15:26*	*1*
Toluene-d8 (Surr)	*80*		*50 - 130*	*06/28/19 15:00*	*07/01/19 15:26*	*1*
4-Bromofluorobenzene	*91*		*57 - 140*	*06/28/19 15:00*	*07/01/19 15:26*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	63.6	U	99.0	63.6	ug/Kg		07/05/19 14:10	07/05/19 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*72*		*43 - 120*	*07/05/19 14:10*	*07/05/19 21:52*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	33.2	U	48.0	33.2	mg/Kg		07/10/19 12:12	07/12/19 23:41	1
C28-C36	33.2	U	48.0	33.2	mg/Kg		07/10/19 12:12	07/12/19 23:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*79*		*26 - 125*	*07/10/19 12:12*	*07/12/19 23:41*	*1*

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7360		79.8	10.7	mg/Kg			07/05/19 18:16	20

Client Sample ID: GWU-03-0-1
Lab Sample ID: 600-187822-6
Date Collected: 06/27/19 08:41
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.529	U	3.96	0.529	mg/Kg			07/02/19 22:41	1

Client Sample Results

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Client Sample ID: GWU-03-1-2

Lab Sample ID: 600-187822-7
Matrix: Solid
Date Collected: 06/27/19 08:46
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.58		3.96	0.529	mg/Kg			07/02/19 14:18	1

Client Sample ID: GWU-04-0-1

Lab Sample ID: 600-187822-8
Matrix: Solid
Date Collected: 06/27/19 08:53
Date Received: 06/28/19 09:56

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000509	U	0.00404	0.000509	mg/Kg		06/28/19 15:00	07/01/19 16:15	1
Ethylbenzene	0.000824	U	0.00404	0.000824	mg/Kg		06/28/19 15:00	07/01/19 16:15	1
Toluene	0.00111	U	0.00404	0.00111	mg/Kg		06/28/19 15:00	07/01/19 16:15	1
Xylenes, Total	0.000913	U	0.00404	0.000913	mg/Kg		06/28/19 15:00	07/01/19 16:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*61 - 130*	*06/28/19 15:00*	*07/01/19 16:15*	*1*
Dibromofluoromethane	*82*		*68 - 140*	*06/28/19 15:00*	*07/01/19 16:15*	*1*
Toluene-d8 (Surr)	*79*		*50 - 130*	*06/28/19 15:00*	*07/01/19 16:15*	*1*
4-Bromofluorobenzene	*92*		*57 - 140*	*06/28/19 15:00*	*07/01/19 16:15*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	64.2	U	100	64.2	ug/Kg		07/05/19 14:10	07/05/19 22:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*49*		*43 - 120*	*07/05/19 14:10*	*07/05/19 22:36*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	45.5	J	50.7	35.1	mg/Kg		07/10/19 12:12	07/13/19 00:07	1
C28-C36	35.1	U	50.7	35.1	mg/Kg		07/10/19 12:12	07/13/19 00:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*78*		*26 - 125*	*07/10/19 12:12*	*07/13/19 00:07*	*1*

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	513		7.95	1.06	mg/Kg			07/05/19 20:03	2

Client Sample ID: GWU-04-1-2

Lab Sample ID: 600-187822-9
Matrix: Solid
Date Collected: 06/27/19 09:01
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1430		39.8	5.32	mg/Kg			07/08/19 19:09	10

Client Sample Results

Client: AECOM
Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Client Sample ID: GWU-04-2-3
Lab Sample ID: 600-187822-10
Date Collected: 06/27/19 09:08
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2410		79.7	10.6	mg/Kg			07/02/19 23:17	20

Client Sample ID: GWU-06-0-1
Lab Sample ID: 600-187822-11
Date Collected: 06/27/19 09:34
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000476	U	0.00378	0.000476	mg/Kg		06/28/19 15:00	07/01/19 17:04	1
Ethylbenzene	0.000770	U	0.00378	0.000770	mg/Kg		06/28/19 15:00	07/01/19 17:04	1
Toluene	0.00104	U	0.00378	0.00104	mg/Kg		06/28/19 15:00	07/01/19 17:04	1
Xylenes, Total	0.000853	U	0.00378	0.000853	mg/Kg		06/28/19 15:00	07/01/19 17:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*61 - 130*	*06/28/19 15:00*	*07/01/19 17:04*	*1*
Dibromofluoromethane	*89*		*68 - 140*	*06/28/19 15:00*	*07/01/19 17:04*	*1*
Toluene-d8 (Surr)	*79*		*50 - 130*	*06/28/19 15:00*	*07/01/19 17:04*	*1*
4-Bromofluorobenzene	*92*		*57 - 140*	*06/28/19 15:00*	*07/01/19 17:04*	*1*

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	64.8	U	101	64.8	ug/Kg		07/05/19 14:10	07/05/19 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*58*		*43 - 120*	*07/05/19 14:10*	*07/05/19 23:18*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	35.6	U	51.5	35.6	mg/Kg		07/10/19 12:12	07/13/19 01:01	1
C28-C36	35.6	U	51.5	35.6	mg/Kg		07/10/19 12:12	07/13/19 01:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*75*		*26 - 125*	*07/10/19 12:12*	*07/13/19 01:01*	*1*

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	212		3.96	0.529	mg/Kg			07/05/19 20:21	1

Client Sample ID: GWU-06-1-2
Lab Sample ID: 600-187822-12
Date Collected: 06/27/19 09:39
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4640		199	26.5	mg/Kg			07/08/19 19:27	50

Client Sample Results

Client: AECOM
Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Client Sample ID: GWU-06-2-3
Lab Sample ID: 600-187822-13
Date Collected: 06/27/19 09:46
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5950		80.0	10.7	mg/Kg			07/02/19 13:07	20

Client Sample ID: GWU-07-0-1
Lab Sample ID: 600-187822-14
Date Collected: 06/27/19 09:57
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12500		2000	266	mg/Kg			07/02/19 22:05	500

Client Sample ID: GWU-08-0-1
Lab Sample ID: 600-187822-15
Date Collected: 06/27/19 10:09
Matrix: Solid
Date Received: 06/28/19 09:56

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	149		7.97	1.06	mg/Kg			07/05/19 21:15	2

Definitions/Glossary

Client: AECOM Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

GC VOA

Qualifier	Qualifier Description
U	Analyte was not detected at or above the SDL.

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the MQL but greater than or equal to the SDL and the concentration is an estimated value.
U	Analyte was not detected at or above the SDL.

HPLC/IC

Qualifier	Qualifier Description
E	Result is greater then the UQL and the concentration is an estimated value.
N1	MS, MSD: Spike recovery exceeds upper or lower control limits.
N2	RPD of the MS and MSD exceeds the control limits
U	Analyte was not detected at or above the SDL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Surrogate Summary

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	DBFM	TOL	BFB
Lab Sample ID	Client Sample ID	(61-130)	(68-140)	(50-130)	(57-140)
600-187822-3	GWU-02-1-2	89	86	77	94
600-187822-5	GWU-02-3-4	88	88	80	91
600-187822-8	GWU-04-0-1	85	82	79	92
600-187822-11	GWU-06-0-1	94	89	79	92
LCS 600-268395/3	Lab Control Sample	73	80	83	95
LCSD 600-268395/4	Lab Control Sample Dup	77	81	83	95
MB 600-268395/6	Method Blank	99	90	79	91

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane
TOL = Toluene-d8 (Surr)
BFB = 4-Bromofluorobenzene

Method: 8015B - Gasoline Range Organics - (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		TFT2
Lab Sample ID	Client Sample ID	(43-120)
600-187804-G-3-B MS	Matrix Spike	93
600-187804-G-3-C MSD	Matrix Spike Duplicate	81
600-187822-3	GWU-02-1-2	62
600-187822-5	GWU-02-3-4	72
600-187822-8	GWU-04-0-1	49
600-187822-11	GWU-06-0-1	58
LCS 240-389904/2-A	Lab Control Sample	79
MB 240-389904/1-A	Method Blank	93

Surrogate Legend

TFT = Trifluorotoluene (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		OTPH1
Lab Sample ID	Client Sample ID	(26-125)
600-187822-3	GWU-02-1-2	77
600-187822-5	GWU-02-3-4	79
600-187822-8	GWU-04-0-1	78
600-187822-11	GWU-06-0-1	75
600-187822-11 MS	GWU-06-0-1	76
600-187822-11 MSD	GWU-06-0-1	82
LCS 240-390514/12-A	Lab Control Sample	86
MB 240-390514/11-A	Method Blank	73

Surrogate Legend

OTPH = o-Terphenyl (Surr)

QC Sample Results

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 600-268395/6
Matrix: Solid
Analysis Batch: 268395

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.000630	U	0.00500	0.000630	mg/Kg			07/01/19 11:27	1
Ethylbenzene	0.00102	U	0.00500	0.00102	mg/Kg			07/01/19 11:27	1
Toluene	0.00138	U	0.00500	0.00138	mg/Kg			07/01/19 11:27	1
Xylenes, Total	0.00113	U	0.00500	0.00113	mg/Kg			07/01/19 11:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*61 - 130*		*07/01/19 11:27*	*1*
Dibromofluoromethane	*90*		*68 - 140*		*07/01/19 11:27*	*1*
Toluene-d8 (Surr)	*79*		*50 - 130*		*07/01/19 11:27*	*1*
4-Bromofluorobenzene	*91*		*57 - 140*		*07/01/19 11:27*	*1*

Lab Sample ID: LCS 600-268395/3
Matrix: Solid
Analysis Batch: 268395

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	0.0500	0.04739		mg/Kg		95	70 - 131
Ethylbenzene	0.0500	0.04787		mg/Kg		96	66 - 130
Toluene	0.0500	0.04620		mg/Kg		92	67 - 130
Xylenes, Total	0.100	0.09559		mg/Kg		96	63 - 130
m-Xylene & p-Xylene	0.0500	0.04776		mg/Kg		96	64 - 130
o-Xylene	0.0500	0.04783		mg/Kg		96	62 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*73*		*61 - 130*
Dibromofluoromethane	*80*		*68 - 140*
Toluene-d8 (Surr)	*83*		*50 - 130*
4-Bromofluorobenzene	*95*		*57 - 140*

Lab Sample ID: LCSD 600-268395/4
Matrix: Solid
Analysis Batch: 268395

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	0.0500	0.04824		mg/Kg		96	70 - 131	2	30
Ethylbenzene	0.0500	0.04884		mg/Kg		98	66 - 130	2	30
Toluene	0.0500	0.04683		mg/Kg		94	67 - 130	1	30
Xylenes, Total	0.100	0.09857		mg/Kg		99	63 - 130	3	30
m-Xylene & p-Xylene	0.0500	0.04926		mg/Kg		99	64 - 130	3	30
o-Xylene	0.0500	0.04931		mg/Kg		99	62 - 130	3	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*77*		*61 - 130*
Dibromofluoromethane	*81*		*68 - 140*
Toluene-d8 (Surr)	*83*		*50 - 130*
4-Bromofluorobenzene	*95*		*57 - 140*

QC Sample Results

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 240-389904/1-A
Matrix: Solid
Analysis Batch: 389909

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 389904

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
C6-C10	64.2	U	100	64.2	ug/Kg		07/05/19 14:10	07/05/19 17:25	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Trifluorotoluene (Surr)	*93*		*43 - 120*	*07/05/19 14:10*	*07/05/19 17:25*	*1*

Lab Sample ID: LCS 240-389904/2-A
Matrix: Solid
Analysis Batch: 389909

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 389904

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
C6-C10	800	840.8		ug/Kg		105	76 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Trifluorotoluene (Surr)	*79*		*43 - 120*

Lab Sample ID: 600-187804-G-3-B MS
Matrix: Solid
Analysis Batch: 389909

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 389904

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
C6-C10	64.8	U	815	727.0		ug/Kg		89	25 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Trifluorotoluene (Surr)	*93*		*43 - 120*

Lab Sample ID: 600-187804-G-3-C MSD
Matrix: Solid
Analysis Batch: 389909

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 389904

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
C6-C10	64.8	U	802	709.7		ug/Kg		89	25 - 120	2	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Trifluorotoluene (Surr)	*81*		*43 - 120*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 240-390514/11-A
Matrix: Solid
Analysis Batch: 390979

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 390514

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10 - C28]	34.6	U	50.0	34.6	mg/Kg		07/10/19 12:12	07/12/19 20:32	1
C28-C36	34.6	U	50.0	34.6	mg/Kg		07/10/19 12:12	07/12/19 20:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*73*		*26 - 125*	*07/10/19 12:12*	*07/12/19 20:32*	*1*

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QC Sample Results

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 240-390514/12-A
Matrix: Solid
Analysis Batch: 390979

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 390514

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics [C10 - C28]			250	203.0		mg/Kg		81	45 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*86*		*26 - 125*

Lab Sample ID: 600-187822-11 MS
Matrix: Solid
Analysis Batch: 390979

Client Sample ID: GWU-06-0-1
Prep Type: Total/NA
Prep Batch: 390514

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics [C10 - C28]	35.6	U	241	179.8		mg/Kg		75	27 - 120		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
o-Terphenyl (Surr)	*76*		*26 - 125*

Lab Sample ID: 600-187822-11 MSD
Matrix: Solid
Analysis Batch: 390979

Client Sample ID: GWU-06-0-1
Prep Type: Total/NA
Prep Batch: 390514

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10 - C28]	35.6	U	244	190.6		mg/Kg		78	27 - 120	6	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*82*		*26 - 125*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 600-268541/1-A
Matrix: Solid
Analysis Batch: 268534

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.534	U	4.00	0.534	mg/Kg			07/02/19 12:30	1

Lab Sample ID: LCS 600-268541/2-A
Matrix: Solid
Analysis Batch: 268534

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			200	196.8		mg/Kg		98	90 - 110		

QC Sample Results

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: 600-187822-13 MS
Matrix: Solid
Analysis Batch: 268534

Client Sample ID: GWU-06-2-3
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	5950		2000	6201	N1	mg/Kg		13	80 - 120

Lab Sample ID: 600-187822-13 MSD
Matrix: Solid
Analysis Batch: 268534

Client Sample ID: GWU-06-2-3
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	5950		2000	5985	N1	mg/Kg		2	80 - 120	4	20

Lab Sample ID: 600-187822-B-5-C MSD
Matrix: Solid
Analysis Batch: 268534

Client Sample ID: 600-187822-B-5-C MSD
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	4040	E	499	3667	E	mg/Kg					

Lab Sample ID: MB 600-268802/1-A
Matrix: Solid
Analysis Batch: 268797

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.534	U	4.00	0.534	mg/Kg			07/05/19 17:16	1

Lab Sample ID: LCS 600-268802/2-A
Matrix: Solid
Analysis Batch: 268797

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	200	197.6		mg/Kg		99	90 - 110

Lab Sample ID: 600-187699-A-2-B MS
Matrix: Solid
Analysis Batch: 268797

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2590		4990	6399	N1	mg/Kg		76	80 - 120

Lab Sample ID: 600-187699-A-2-C MSD
Matrix: Solid
Analysis Batch: 268797

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	2590		4990	6387	N1	mg/Kg		76	80 - 120	0	20

Lab Sample ID: 600-187822-5 MS
Matrix: Solid
Analysis Batch: 268797

Client Sample ID: GWU-02-3-4
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7360		2000	5993	N1	mg/Kg		-68	80 - 120

QC Sample Results

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: 600-187822-5 MSD
Matrix: Solid
Analysis Batch: 268797

Client Sample ID: GWU-02-3-4
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	7360		2000	6028	N1	mg/Kg		-67	80 - 120	1	20

Lab Sample ID: MB 600-268903/1-A
Matrix: Solid
Analysis Batch: 268878

Client Sample ID: Method Blank
Prep Type: Soluble

Analyte	MB Result	MB Qualifier	MQL (Adj)	SDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.534	U	4.00	0.534	mg/Kg			07/08/19 15:17	1

Lab Sample ID: LCS 600-268903/2-A
Matrix: Solid
Analysis Batch: 268878

Client Sample ID: Lab Control Sample
Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	200	198.0		mg/Kg		99	90 - 110

Lab Sample ID: 600-187716-B-6-B MS
Matrix: Solid
Analysis Batch: 268878

Client Sample ID: Matrix Spike
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	237		4990	5040		mg/Kg		96	80 - 120

Lab Sample ID: 600-187716-B-6-C MSD
Matrix: Solid
Analysis Batch: 268878

Client Sample ID: Matrix Spike Duplicate
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	237		4990	6219	N2	mg/Kg		120	80 - 120	21	20

Unadjusted Detection Limits

Client: AECOM Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Method: 8260B - Volatile Organic Compounds (GC/MS)

Prep: 5035

Analyte	MQL	MDL	Units
Benzene	0.00500	0.000630	mg/Kg
Ethylbenzene	0.00500	0.00102	mg/Kg
Toluene	0.00500	0.00138	mg/Kg
Xylenes, Total	0.00500	0.00113	mg/Kg

Method: 8015B - Gasoline Range Organics - (GC)

Prep: 5030A

Analyte	MQL	MDL	Units
C6-C10	100	64.2	ug/Kg

Method: 8015B - Diesel Range Organics (DRO) (GC)

Prep: 3546

Analyte	MQL	MDL	Units
C28-C36	50.0	34.6	mg/Kg
Diesel Range Organics [C10 - C28]	50.0	34.6	mg/Kg

Method: 9056A - Anions, Ion Chromatography - Soluble

Leach: DI Leach

Analyte	MQL	MDL	Units
Chloride	4.00	0.534	mg/Kg

QC Association Summary

Client: AECOM Job ID: 600-187822-1
Project/Site: Glorietta West Unit

GC/MS VOA

Analysis Batch: 268395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-3	GWU-02-1-2	Total/NA	Solid	8260B	268424
600-187822-5	GWU-02-3-4	Total/NA	Solid	8260B	268424
600-187822-8	GWU-04-0-1	Total/NA	Solid	8260B	268424
600-187822-11	GWU-06-0-1	Total/NA	Solid	8260B	268424
MB 600-268395/6	Method Blank	Total/NA	Solid	8260B	
LCS 600-268395/3	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 600-268395/4	Lab Control Sample Dup	Total/NA	Solid	8260B	

Prep Batch: 268424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-3	GWU-02-1-2	Total/NA	Solid	5035	
600-187822-5	GWU-02-3-4	Total/NA	Solid	5035	
600-187822-8	GWU-04-0-1	Total/NA	Solid	5035	
600-187822-11	GWU-06-0-1	Total/NA	Solid	5035	

GC VOA

Prep Batch: 389904

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-3	GWU-02-1-2	Total/NA	Solid	5030A	
600-187822-5	GWU-02-3-4	Total/NA	Solid	5030A	
600-187822-8	GWU-04-0-1	Total/NA	Solid	5030A	
600-187822-11	GWU-06-0-1	Total/NA	Solid	5030A	
MB 240-389904/1-A	Method Blank	Total/NA	Solid	5030A	
LCS 240-389904/2-A	Lab Control Sample	Total/NA	Solid	5030A	
600-187804-G-3-B MS	Matrix Spike	Total/NA	Solid	5030A	
600-187804-G-3-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5030A	

Analysis Batch: 389909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-3	GWU-02-1-2	Total/NA	Solid	8015B	389904
600-187822-5	GWU-02-3-4	Total/NA	Solid	8015B	389904
600-187822-8	GWU-04-0-1	Total/NA	Solid	8015B	389904
600-187822-11	GWU-06-0-1	Total/NA	Solid	8015B	389904
MB 240-389904/1-A	Method Blank	Total/NA	Solid	8015B	389904
LCS 240-389904/2-A	Lab Control Sample	Total/NA	Solid	8015B	389904
600-187804-G-3-B MS	Matrix Spike	Total/NA	Solid	8015B	389904
600-187804-G-3-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	389904

GC Semi VOA

Prep Batch: 390514

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-3	GWU-02-1-2	Total/NA	Solid	3546	
600-187822-5	GWU-02-3-4	Total/NA	Solid	3546	
600-187822-8	GWU-04-0-1	Total/NA	Solid	3546	
600-187822-11	GWU-06-0-1	Total/NA	Solid	3546	
MB 240-390514/11-A	Method Blank	Total/NA	Solid	3546	
LCS 240-390514/12-A	Lab Control Sample	Total/NA	Solid	3546	
600-187822-11 MS	GWU-06-0-1	Total/NA	Solid	3546	
600-187822-11 MSD	GWU-06-0-1	Total/NA	Solid	3546	

QC Association Summary

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

GC Semi VOA

Analysis Batch: 390979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-3	GWU-02-1-2	Total/NA	Solid	8015B	390514
600-187822-5	GWU-02-3-4	Total/NA	Solid	8015B	390514
600-187822-8	GWU-04-0-1	Total/NA	Solid	8015B	390514
600-187822-11	GWU-06-0-1	Total/NA	Solid	8015B	390514
MB 240-390514/11-A	Method Blank	Total/NA	Solid	8015B	390514
LCS 240-390514/12-A	Lab Control Sample	Total/NA	Solid	8015B	390514
600-187822-11 MS	GWU-06-0-1	Total/NA	Solid	8015B	390514
600-187822-11 MSD	GWU-06-0-1	Total/NA	Solid	8015B	390514

HPLC/IC

Analysis Batch: 268534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-1	GWU-01-0-1	Soluble	Solid	9056A	268541
600-187822-6	GWU-03-0-1	Soluble	Solid	9056A	268541
600-187822-7	GWU-03-1-2	Soluble	Solid	9056A	268541
600-187822-10	GWU-04-2-3	Soluble	Solid	9056A	268541
600-187822-13	GWU-06-2-3	Soluble	Solid	9056A	268541
600-187822-14	GWU-07-0-1	Soluble	Solid	9056A	268541
MB 600-268541/1-A	Method Blank	Soluble	Solid	9056A	268541
LCS 600-268541/2-A	Lab Control Sample	Soluble	Solid	9056A	268541
600-187822-13 MS	GWU-06-2-3	Soluble	Solid	9056A	268541
600-187822-13 MSD	GWU-06-2-3	Soluble	Solid	9056A	268541
600-187822-B-5-B MS	600-187822-B-5-B MS	Soluble	Solid	9056A	268541
600-187822-B-5-C MSD	600-187822-B-5-C MSD	Soluble	Solid	9056A	268541

Leach Batch: 268541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-1	GWU-01-0-1	Soluble	Solid	DI Leach	
600-187822-6	GWU-03-0-1	Soluble	Solid	DI Leach	
600-187822-7	GWU-03-1-2	Soluble	Solid	DI Leach	
600-187822-10	GWU-04-2-3	Soluble	Solid	DI Leach	
600-187822-13	GWU-06-2-3	Soluble	Solid	DI Leach	
600-187822-14	GWU-07-0-1	Soluble	Solid	DI Leach	
MB 600-268541/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 600-268541/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
600-187822-13 MS	GWU-06-2-3	Soluble	Solid	DI Leach	
600-187822-13 MSD	GWU-06-2-3	Soluble	Solid	DI Leach	
600-187822-B-5-B MS	600-187822-B-5-B MS	Soluble	Solid	DI Leach	
600-187822-B-5-C MSD	600-187822-B-5-C MSD	Soluble	Solid	DI Leach	

Analysis Batch: 268797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-2	GWU-02-0-1	Soluble	Solid	9056A	268802
600-187822-5	GWU-02-3-4	Soluble	Solid	9056A	268802
600-187822-8	GWU-04-0-1	Soluble	Solid	9056A	268802
600-187822-11	GWU-06-0-1	Soluble	Solid	9056A	268802
600-187822-15	GWU-08-0-1	Soluble	Solid	9056A	268802
MB 600-268802/1-A	Method Blank	Soluble	Solid	9056A	268802
LCS 600-268802/2-A	Lab Control Sample	Soluble	Solid	9056A	268802
600-187699-A-2-B MS	Matrix Spike	Soluble	Solid	9056A	268802

QC Association Summary

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

HPLC/IC (Continued)

Analysis Batch: 268797 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187699-A-2-C MSD	Matrix Spike Duplicate	Soluble	Solid	9056A	268802
600-187822-5 MS	GWU-02-3-4	Soluble	Solid	9056A	268802
600-187822-5 MSD	GWU-02-3-4	Soluble	Solid	9056A	268802

Leach Batch: 268802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-2	GWU-02-0-1	Soluble	Solid	DI Leach	
600-187822-3	GWU-02-1-2	Soluble	Solid	DI Leach	
600-187822-5	GWU-02-3-4	Soluble	Solid	DI Leach	
600-187822-8	GWU-04-0-1	Soluble	Solid	DI Leach	
600-187822-11	GWU-06-0-1	Soluble	Solid	DI Leach	
600-187822-15	GWU-08-0-1	Soluble	Solid	DI Leach	
MB 600-268802/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 600-268802/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
600-187699-A-2-B MS	Matrix Spike	Soluble	Solid	DI Leach	
600-187699-A-2-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
600-187822-5 MS	GWU-02-3-4	Soluble	Solid	DI Leach	
600-187822-5 MSD	GWU-02-3-4	Soluble	Solid	DI Leach	

Analysis Batch: 268878

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-3	GWU-02-1-2	Soluble	Solid	9056A	268802
600-187822-4	GWU-02-2-3	Soluble	Solid	9056A	268903
600-187822-9	GWU-04-1-2	Soluble	Solid	9056A	268903
600-187822-12	GWU-06-1-2	Soluble	Solid	9056A	268903
MB 600-268903/1-A	Method Blank	Soluble	Solid	9056A	268903
LCS 600-268903/2-A	Lab Control Sample	Soluble	Solid	9056A	268903
600-187716-B-6-B MS	Matrix Spike	Soluble	Solid	9056A	268903
600-187716-B-6-C MSD	Matrix Spike Duplicate	Soluble	Solid	9056A	268903

Leach Batch: 268903

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
600-187822-4	GWU-02-2-3	Soluble	Solid	DI Leach	
600-187822-9	GWU-04-1-2	Soluble	Solid	DI Leach	
600-187822-12	GWU-06-1-2	Soluble	Solid	DI Leach	
MB 600-268903/1-A	Method Blank	Soluble	Solid	DI Leach	
LCS 600-268903/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
600-187716-B-6-B MS	Matrix Spike	Soluble	Solid	DI Leach	
600-187716-B-6-C MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	

Lab Chronicle

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Client Sample ID: GWU-01-0-1 — Lab Sample ID: 600-187822-1

Date Collected: 06/27/19 07:58 — **Matrix: Solid**
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		20	268534	07/02/19 14:54	SKR	TAL HOU

Client Sample ID: GWU-02-0-1 — Lab Sample ID: 600-187822-2

Date Collected: 06/27/19 08:05 — **Matrix: Solid**
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		2	268797	07/05/19 19:27	SKR	TAL HOU

Client Sample ID: GWU-02-1-2 — Lab Sample ID: 600-187822-3

Date Collected: 06/27/19 08:12 — **Matrix: Solid**
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268424	06/28/19 15:00	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268395	07/01/19 15:02	WS1	TAL HOU
Total/NA	Prep	5030A			389904	07/05/19 14:10	KMG	TAL CAN
Total/NA	Analysis	8015B		1	389909	07/05/19 21:10	KMG	TAL CAN
Total/NA	Prep	3546			390514	07/10/19 12:12	EMB	TAL CAN
Total/NA	Analysis	8015B		1	390979	07/12/19 23:14	DEB	TAL CAN
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		10	268878	07/08/19 14:09	SKR	TAL HOU

Client Sample ID: GWU-02-2-3 — Lab Sample ID: 600-187822-4

Date Collected: 06/27/19 08:19 — **Matrix: Solid**
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268903	07/08/19 17:35	SKR	TAL HOU
Soluble	Analysis	9056A		50	268878	07/08/19 18:51	SKR	TAL HOU

Client Sample ID: GWU-02-3-4 — Lab Sample ID: 600-187822-5

Date Collected: 06/27/19 08:29 — **Matrix: Solid**
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268424	06/28/19 15:00	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268395	07/01/19 15:26	WS1	TAL HOU
Total/NA	Prep	5030A			389904	07/05/19 14:10	KMG	TAL CAN
Total/NA	Analysis	8015B		1	389909	07/05/19 21:52	KMG	TAL CAN
Total/NA	Prep	3546			390514	07/10/19 12:12	EMB	TAL CAN
Total/NA	Analysis	8015B		1	390979	07/12/19 23:41	DEB	TAL CAN
Soluble	Analysis	9056A		20	268797	07/05/19 18:16	SKR	TAL HOU
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU

Lab Chronicle

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Client Sample ID: GWU-03-0-1
Lab Sample ID: 600-187822-6
Date Collected: 06/27/19 08:41
Matrix: Solid
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 17:11	SKR	TAL HOU
Soluble	Analysis	9056A		1	268534	07/02/19 22:41	SKR	TAL HOU

Client Sample ID: GWU-03-1-2
Lab Sample ID: 600-187822-7
Date Collected: 06/27/19 08:46
Matrix: Solid
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		1	268534	07/02/19 14:18	SKR	TAL HOU

Client Sample ID: GWU-04-0-1
Lab Sample ID: 600-187822-8
Date Collected: 06/27/19 08:53
Matrix: Solid
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268424	06/28/19 15:00	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268395	07/01/19 16:15	WS1	TAL HOU
Total/NA	Prep	5030A			389904	07/05/19 14:10	KMG	TAL CAN
Total/NA	Analysis	8015B		1	389909	07/05/19 22:36	KMG	TAL CAN
Total/NA	Prep	3546			390514	07/10/19 12:12	EMB	TAL CAN
Total/NA	Analysis	8015B		1	390979	07/13/19 00:07	DEB	TAL CAN
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		2	268797	07/05/19 20:03	SKR	TAL HOU

Client Sample ID: GWU-04-1-2
Lab Sample ID: 600-187822-9
Date Collected: 06/27/19 09:01
Matrix: Solid
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268903	07/08/19 17:35	SKR	TAL HOU
Soluble	Analysis	9056A		10	268878	07/08/19 19:09	SKR	TAL HOU

Client Sample ID: GWU-04-2-3
Lab Sample ID: 600-187822-10
Date Collected: 06/27/19 09:08
Matrix: Solid
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 17:12	SKR	TAL HOU
Soluble	Analysis	9056A		20	268534	07/02/19 23:17	SKR	TAL HOU

Lab Chronicle

Client: AECOM
Project/Site: Glorietta West Unit

Job ID: 600-187822-1

Client Sample ID: GWU-06-0-1

Lab Sample ID: 600-187822-11
Matrix: Solid
Date Collected: 06/27/19 09:34
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			268424	06/28/19 15:00	WS1	TAL HOU
Total/NA	Analysis	8260B		1	268395	07/01/19 17:04	WS1	TAL HOU
Total/NA	Prep	5030A			389904	07/05/19 14:10	KMG	TAL CAN
Total/NA	Analysis	8015B		1	389909	07/05/19 23:18	KMG	TAL CAN
Total/NA	Prep	3546			390514	07/10/19 12:12	EMB	TAL CAN
Total/NA	Analysis	8015B		1	390979	07/13/19 01:01	DEB	TAL CAN
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		1	268797	07/05/19 20:21	SKR	TAL HOU

Client Sample ID: GWU-06-1-2

Lab Sample ID: 600-187822-12
Matrix: Solid
Date Collected: 06/27/19 09:39
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268903	07/08/19 17:35	SKR	TAL HOU
Soluble	Analysis	9056A		50	268878	07/08/19 19:27	SKR	TAL HOU

Client Sample ID: GWU-06-2-3

Lab Sample ID: 600-187822-13
Matrix: Solid
Date Collected: 06/27/19 09:46
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 12:43	SKR	TAL HOU
Soluble	Analysis	9056A		20	268534	07/02/19 13:07	SKR	TAL HOU

Client Sample ID: GWU-07-0-1

Lab Sample ID: 600-187822-14
Matrix: Solid
Date Collected: 06/27/19 09:57
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268541	07/02/19 17:11	SKR	TAL HOU
Soluble	Analysis	9056A		500	268534	07/02/19 22:05	SKR	TAL HOU

Client Sample ID: GWU-08-0-1

Lab Sample ID: 600-187822-15
Matrix: Solid
Date Collected: 06/27/19 10:09
Date Received: 06/28/19 09:56

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			268802	07/05/19 18:25	SKR	TAL HOU
Soluble	Analysis	9056A		2	268797	07/05/19 21:15	SKR	TAL HOU

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL HOU = Eurofins TestAmerica, Houston, 6310 Rothway Street, Houston, TX 77040, TEL (713)690-4444

Accreditation/Certification Summary

Client: AECOM
Job ID: 600-187822-1
Project/Site: Glorietta West Unit

Laboratory: Eurofins TestAmerica, Houston

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Texas	NELAP	6	T104704223-18-23	10-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-20
Florida	NELAP		E87225	06-30-20
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State		OH00048	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-20
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State		210	12-31-19
West Virginia DEP	State Program	3	210	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Seth Frederick	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-69310-18903.1
Client Contact: Mr. Wallace Gilmore	Phone: 505.699.3257	E-Mail: sachin.kudchadkar@testamericainc.com		Page: Page 1/2
Company: AECOM		Analysis Requested		Job #:
Address: 19219 Katy Freeway Suite 100	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, M - Hexane
City: Houston	TAT Requested (days):			
State, Zip: TX, 77094				
Phone: 713-520-990(Tel) 713-520-680(Fax)	PO #:			
Email: wallace.gilmore@aecom.com	WO #:			
Project Name: Chevron	Project #: 60008660			
Site: Glorietta West Unit	SSOW#:			

600-187822 Chain of Custody

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	TX_1005 - (TPH	8260B - BTEX Only	9056_ORGFM_28D - Chloride	1311/ 6010B, 7470A - TCLP metals	moisture	Total Number of containers	s/Note:
				Preservation Code:			N	N	N	N	N		
GWU-01-0-1	6/27/19	0758	G	Solid			~~1~~ 2	3	1		1		
GWU-02-0-1	↓	0805	↓	Solid					1				
GWU-02-1-2	↓	0812	↓	Solid			2	3	1		1		
GWU-02-2-3	↓	0819	↓	Solid			2	3	1		1		Hold
GWU-02-3-4	↓	0829	↓	Solid			2	3	1		1		~~Hold~~
GWU-03-0-1	↓	0841	↓	Solid					1				
GWU-03-1-2	↓	0846	↓	Solid			2	3	1		1		
GWU-04-0-1	↓	0853	↓	Solid			2	3	1		1		
GWU-04-1-2	↓	0901	↓	Solid			2	3	1		1		Hold
GWU-04-2-3	↓	0908	↓	Solid			2	3	1		1		~~Hold~~
~~GWU-05-0-1~~		~~0921~~		~~Solid~~									

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:	
Relinquished by: [signature]	Date/Time: 6/27/19 @ 1700	Company: AECOM	Received by: [signature]	Date/Time: 6-28-19 9:35	Company: [illegible]
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Seth Frederick	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-69310-18903.1
Client Contact: Mr. Wallace Gilmore	Phone: 505.699.3257	E-Mail: sachin.kudchadkar@testamericainc.com		Page: Page 2/2
Company: AECOM				Job #:

Address: 19219 Katy Freeway Suite 100	Due Date Requested:
City: Houston	TAT Requested (days):
State, Zip: TX, 77094	
Phone: 713-520-990(Tel) 713-520-680(Fax)	PO #:
Email: wallace.gilmore@aecom.com	WO #:
Project Name: Chevron	Project #: 60008660
Site: Gloriettawestunit	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	TX_1005 - (TPH	8260B - BTEX Only	9056_ORGFM_28D - Chloride	1311/ 6010B, 7470A - TCLP metals	moisture	Total Number of containers	Special Instructions/Note:
			Preservation Code				N	N	N	N	N		
GWU-06-0-1	6/27/19	0934	G	Solid									
GWU-06-1-2		0939		Solid									Hold
GWU-06-2-3		0946		Solid									~~Hold~~ DLW
GWU-07-0-1		0957		Solid									
GWU-08-0-1		1009		Solid									
				Solid									
				Solid									
				Solid									
				Solid									
				Solid									
				Solid									

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Loyd Hai	6/27/19 @ 1700	AECOM		6/28/19 956	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

TestAmerica Houston

Sample Receipt Check

Loc: 600
187822

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Date/Time Received: '19 JUN 28 9:56

JOB NUMBER: 602

CLIENT: AECOM

UNPACKED BY:

CARRIER/DRIVER: FS

Custody Seal Present: ☒ YES ☐ NO

Number of Coolers Received: 1

Cooler ID	Temp Blank	Trip Blank	Observed Temp (°C)	Therm ID	Them CF	Corrected Temp (°C)
GW	Y / N	Y / N	3.6	68	-0.1	3.7
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				
	Y / N	Y / N				

CF = correction factor

Samples received on ice? ☒ YES ☐ NO

LABORATORY PRESERVATION OF SAMPLES REQUIRED: ☒ NO ☐ YES

Base samples are>pH 12: ☐ YES ☐ NO Acid preserved are<pH 2: ☐ YES ☐ NO

pH paper Lot #_____

VOA headspace acceptable (5-6mm): ☒ YES ☐ NO ☐ NA

	YES	NO
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		

COMMENTS:

HS-SA-WI-013 Rev. 3; 07/01/2014

2906 6305

FedEx
TRK# 0221 4840 2906 6305

FRI – 28 JUN 10:30A
PRIORITY OVERNIGHT 0

AB LKSA

77040
TX-US IAH

Part # 156297-435 HRDB2 EXP 05/20

#20265 06/27 565J1/D210/23AD

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone: 713-690-4444 Fax: 713-690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-40424.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sachin.kudchadkar@testamericainc.com	State of Origin: Texas	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Texas		Job #: 600-187822-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 7/8/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Glorietta West Unit	Project #: 60008660			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

C177 116

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/5030B_SolidNAC (MOD) Copy Analytes	8015B_DRO/3546 (MOD) Diesel Range Organics [C10-C28]	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
GMW-01-0-1 (600-187822-1)	6/27/19	07:58 Central		Solid			X	X	3	
GMW-02-1-2 (600-187822-3)	6/27/19	08:12 Central		Solid			X	X	3	
GMW-02-3-4 (600-187822-5)	6/27/19	08:29 Central		Solid			X	X	3	
GMW-03-1-2 (600-187822-7)	6/27/19	08:46 Central		Solid			X	X	3	
GMW-04-0-1 (600-187822-8)	6/27/19	08:53 Central		Solid			X	X	3	
GMW-04-2-3 (600-187822-10)	6/27/19	09:08 Central		Solid			X	X	3	
GMW-06-0-1 (600-187822-11)	6/27/19	09:34 Central		Solid			X	X	3	
GMW-06-2-3 (600-187822-13)	6/27/19	09:46 Central		Solid			X	X	3	
GMW-07-0-1 (600-187822-14)	6/27/19	09:57 Central		Solid			X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		7/2 1600			7-3-19 945	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone: 713-690-4444 Fax: 713-690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-40424.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: sachin.kudchadkar@testamericainc.com	State of Origin: Texas	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Texas		Job #: 600-187822-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 7/8/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Glorietta West Unit	Project #: 60008660			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

(177 GL

Special Instructions/Note:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/5030B_SolidNAC (MOD) Copy Analytes	8015B_DRO/3546 (MOD) Diesel Range Organics [C10-C28]	Total Number of containers
			Preservation Code:						
GMW-08-0-1 (600-187822-15)	6/27/19	10:09 Central		Solid			X	X	3

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	7-2 1200		[signature]	7-3-19 945	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Houston Site Name _____ Cooler unpacked by:

Cooler Received on 7-3-19 Opened on 7-3-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 14 Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp. 1.6 °C Corrected Cooler Temp. 1.7 °C
   IR GUN #36 (CF **+0.6**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC984738
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone: 713-690-4444 Fax: 713-690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-40424.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sachin.kudchadkar@testamericainc.com	State of Origin: Texas	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Texas		Job #: 600-187822-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 7/8/2019			
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Glorietta West Unit	Project #: 60008660			
Site:	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/5030B_SolidNAC (MOD) Copy Analytes	8015B_DRO/3546 (MOD) Diesel Range Organics [C10-C28]	Total Number of containers	Special Instructions/Note:
			Preservation Code:							C177 (16
GMW-01-0-1 (600-187822-1)	6/27/19	07:58 Central		Solid			X	X	3	
GMW-02-1-2 (600-187822-3)	6/27/19	08:12 Central		Solid			X	X	3	
GMW-02-3-4 (600-187822-5)	6/27/19	08:29 Central		Solid			X	X	3	
GMW-03-1-2 (600-187822-7)	6/27/19	08:46 Central		Solid			X	X	3	
GMW-04-0-1 (600-187822-8)	6/27/19	08:53 Central		Solid			X	X	3	
GMW-04-2-3 (600-187822-10)	6/27/19	09:08 Central		Solid			X	X	3	
GMW-06-0-1 (600-187822-11)	6/27/19	09:34 Central		Solid			X	X	3	
GMW-06-2-3 (600-187822-13)	6/27/19	09:46 Central		Solid			X	X	3	
GMW-07-0-1 (600-187822-14)	6/27/19	09:57 Central		Solid			X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	7/2 1600		[signature]	7-3-19 945	TA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone: 713-690-4444 Fax: 713-690-5646

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-40424.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: sachin.kudchadkar@testamericainc.com	State of Origin: Texas	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - Texas		Job #: 600-187822-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 7/8/2019	**Analysis Requested**		**Preservation Codes:**
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Glorietta West Unit	Project #: 60008660			
Site:	SSOW#:			

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/5030B_SolidNAC (MOD) Copy Analytes	8015B_DRO/3546 (MOD) Diesel Range Organics [C10-C28]	Total Number of containers	Special Instructions/Note: C177 GL
			Preservation Code:							
GMW-08-0-1 (600-187822-15)	6/27/19	10:09 Central		Solid			X	X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:		Method of Shipment:	
Relinquished by: [signature]	Date/Time: 7/2 1600	Company	Received by: [signature]	Date/Time: 7-3-19 945	Company: TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____
Canton Facility

Client Houston Site Name _____ Cooler unpacked by:

Cooler Received on 7-3-19 Opened on 7-3-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 7A Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp. 1.6 °C Corrected Cooler Temp. 1.7 °C
   IR GUN #36 (CF **+0.6**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels be reconciled with the COC?	Yes	No
9. Were correct bottle(s) used for the test(s) indicated?	Yes	No
10. Sufficient quantity received to perform indicated analyses?	Yes	No
11. Are these work share samples?	Yes	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC984738
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by:

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login Sample Receipt Checklist

Client: AECOM Job Number: 600-187822-1

Login Number: 187822 **List Source: Eurofins TestAmerica, Houston**
List Number: 1
Creator: Crafton, Tommie S

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.7
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Received Trip Blank(s) not listed on COC.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	Check done at department level as required.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

October 02, 2019

Wallace Gilmore
AECOM
19219 Katy Freeway
Suite 100
Houston, TX 77094

Work Order: **HS19090941**

Laboratory Results for: **60614104 Vacuum Glortetta West Unit**

Dear Wallace,

ALS Environmental received 12 sample(s) on Sep 19, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glortetta West Unit
Work Order: HS19090941

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19090941-01	GWU-09 0-1	Solid		18-Sep-2019 11:20	19-Sep-2019 08:30	☐
HS19090941-02	GWU-10 0-1	Solid		18-Sep-2019 11:35	19-Sep-2019 08:30	☐
HS19090941-03	GWU-11 0-1	Solid		18-Sep-2019 11:52	19-Sep-2019 08:30	☐
HS19090941-04	GWU-12 0-1	Solid		18-Sep-2019 12:08	19-Sep-2019 08:30	☐
HS19090941-05	GWU-12 1-2	Solid		18-Sep-2019 12:17	19-Sep-2019 08:30	☐
HS19090941-06	GWU-12 2-3	Solid		18-Sep-2019 12:22	19-Sep-2019 08:30	☐
HS19090941-07	GWU-12 3-4	Solid		18-Sep-2019 12:33	19-Sep-2019 08:30	☐
HS19090941-08	GWU-13 0-1	Solid		18-Sep-2019 12:48	19-Sep-2019 08:30	☐
HS19090941-09	GWU-13 1-2	Solid		18-Sep-2019 12:58	19-Sep-2019 08:30	☐
HS19090941-10	GWU-14 0-1	Solid		18-Sep-2019 13:15	19-Sep-2019 08:30	☐
HS19090941-11	GWU-15 0-1	Solid		18-Sep-2019 13:31	19-Sep-2019 08:30	☐
HS19090941-12	Trip Blank	Water	C&G-080519-574	18-Sep-2019 00:00	19-Sep-2019 08:30	☐

ALS Houston, US Date: 02-Oct-19

Client: AECOM **CASE NARRATIVE**
Project: 60614104 Vacuum Glorietta West Unit
Work Order: HS19090941

GC Volatiles by Method SW8015

Batch ID: R346706

Sample ID: HS19090789-02MSD

- MSD is for an unrelated sample

Batch ID: R346707

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R346612

Sample ID: HS19090787-01MS

- MS and MSD are for an unrelated sample

Batch ID: R346698

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method ASTM D2216

Batch ID: R346899

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9250

Batch ID: 145606

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-09 0-1
Collection Date: 18-Sep-2019 11:20

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-01
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00052		0.00052	0.0052	mg/Kg-dry	1	20-Sep-2019 15:42
Ethylbenzene	< 0.00072		0.00072	0.0052	mg/Kg-dry	1	20-Sep-2019 15:42
Toluene	< 0.00062		0.00062	0.0052	mg/Kg-dry	1	20-Sep-2019 15:42
Xylenes, Total	< 0.0010		0.0010	0.0052	mg/Kg-dry	1	20-Sep-2019 15:42
Surr: 1,2-Dichloroethane-d4	*81.6*			*70-126*	*%REC*	*1*	*20-Sep-2019 15:42*
Surr: 4-Bromofluorobenzene	*98.2*			*70-130*	*%REC*	*1*	*20-Sep-2019 15:42*
Surr: Dibromofluoromethane	*84.6*			*70-130*	*%REC*	*1*	*20-Sep-2019 15:42*
Surr: Toluene-d8	*99.1*			*70-130*	*%REC*	*1*	*20-Sep-2019 15:42*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.053	mg/Kg-dry	1	21-Sep-2019 22:00
Surr: 4-Bromofluorobenzene	*114*			*70-123*	*%REC*	*1*	*21-Sep-2019 22:00*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**5.25**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	< 2.87		2.87	10.5	mg/Kg-dry	1	01-Oct-2019 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-10 0-1
Collection Date: 18-Sep-2019 11:35

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-02
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00050		0.00050	0.0050	mg/Kg-dry	1	20-Sep-2019 16:07
Ethylbenzene	< 0.00070		0.00070	0.0050	mg/Kg-dry	1	20-Sep-2019 16:07
Toluene	< 0.00060		0.00060	0.0050	mg/Kg-dry	1	20-Sep-2019 16:07
Xylenes, Total	< 0.0010		0.0010	0.0050	mg/Kg-dry	1	20-Sep-2019 16:07
Surr: 1,2-Dichloroethane-d4	*82.7*			*70-126*	*%REC*	*1*	*20-Sep-2019 16:07*
Surr: 4-Bromofluorobenzene	*97.8*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:07*
Surr: Dibromofluoromethane	*86.3*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:07*
Surr: Toluene-d8	*97.1*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:07*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.053	mg/Kg-dry	1	21-Sep-2019 22:16
Surr: 4-Bromofluorobenzene	*115*			*70-123*	*%REC*	*1*	*21-Sep-2019 22:16*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**2.26**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	**12.3**		**2.72**	**9.91**	**mg/Kg-dry**	1	01-Oct-2019 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-11 0-1
Collection Date: 18-Sep-2019 11:52

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-03
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00050		0.00050	0.0050	mg/Kg-dry	1	20-Sep-2019 16:32
Ethylbenzene	< 0.00070		0.00070	0.0050	mg/Kg-dry	1	20-Sep-2019 16:32
Toluene	< 0.00060		0.00060	0.0050	mg/Kg-dry	1	20-Sep-2019 16:32
Xylenes, Total	< 0.0010		0.0010	0.0050	mg/Kg-dry	1	20-Sep-2019 16:32
Surr: 1,2-Dichloroethane-d4	*86.9*			*70-126*	*%REC*	*1*	*20-Sep-2019 16:32*
Surr: 4-Bromofluorobenzene	*101*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:32*
Surr: Dibromofluoromethane	*87.2*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:32*
Surr: Toluene-d8	*101*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:32*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.010		0.010	0.051	mg/Kg-dry	1	21-Sep-2019 22:32
Surr: 4-Bromofluorobenzene	*116*			*70-123*	*%REC*	*1*	*21-Sep-2019 22:32*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**2.23**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	< 2.92		2.92	10.6	mg/Kg-dry	1	01-Oct-2019 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-12 0-1
Collection Date: 18-Sep-2019 12:08

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-04
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**26.0**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	**992**		**37.2**	**136**	**mg/Kg-dry**	10	01-Oct-2019 15:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-12 1-2
Collection Date: 18-Sep-2019 12:17

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-05
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**15.9**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	**1,590**		**33.1**	**121**	**mg/Kg-dry**	10	01-Oct-2019 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-12 2-3
Collection Date: 18-Sep-2019 12:22

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-06
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: DFF
Percent Moisture	**23.4**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	**620**		**3.63**	**13.3**	**mg/Kg-dry**	1	01-Oct-2019 13:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-12 3-4
Collection Date: 18-Sep-2019 12:33

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-07
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00058		0.00058	0.0058	mg/Kg-dry	1	20-Sep-2019 16:57
Ethylbenzene	< 0.00081		0.00081	0.0058	mg/Kg-dry	1	20-Sep-2019 16:57
Toluene	< 0.00069		0.00069	0.0058	mg/Kg-dry	1	20-Sep-2019 16:57
Xylenes, Total	< 0.0012		0.0012	0.0058	mg/Kg-dry	1	20-Sep-2019 16:57
Surr: 1,2-Dichloroethane-d4	*79.8*			*70-126*	*%REC*	*1*	*20-Sep-2019 16:57*
Surr: 4-Bromofluorobenzene	*96.9*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:57*
Surr: Dibromofluoromethane	*85.7*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:57*
Surr: Toluene-d8	*98.1*			*70-130*	*%REC*	*1*	*20-Sep-2019 16:57*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.012		0.012	0.060	mg/Kg-dry	1	21-Sep-2019 23:36
Surr: 4-Bromofluorobenzene	*117*			*70-123*	*%REC*	*1*	*21-Sep-2019 23:36*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**13.4**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	**661**		**30.7**	**112**	**mg/Kg-dry**	10	01-Oct-2019 15:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-13 0-1
Collection Date: 18-Sep-2019 12:48

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-08
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**2.55**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	**4.54**	J	**2.70**	**9.85**	**mg/Kg-dry**	1	01-Oct-2019 13:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-13 1-2
Collection Date: 18-Sep-2019 12:58

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-09
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00052		0.00052	0.0052	mg/Kg-dry	1	20-Sep-2019 17:22
Ethylbenzene	< 0.00073		0.00073	0.0052	mg/Kg-dry	1	20-Sep-2019 17:22
Toluene	< 0.00062		0.00062	0.0052	mg/Kg-dry	1	20-Sep-2019 17:22
Xylenes, Total	< 0.0010		0.0010	0.0052	mg/Kg-dry	1	20-Sep-2019 17:22
Surr: 1,2-Dichloroethane-d4	*88.3*			*70-126*	*%REC*	*1*	*20-Sep-2019 17:22*
Surr: 4-Bromofluorobenzene	*102*			*70-130*	*%REC*	*1*	*20-Sep-2019 17:22*
Surr: Dibromofluoromethane	*89.4*			*70-130*	*%REC*	*1*	*20-Sep-2019 17:22*
Surr: Toluene-d8	*100*			*70-130*	*%REC*	*1*	*20-Sep-2019 17:22*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.055	mg/Kg-dry	1	22-Sep-2019 01:28
Surr: 4-Bromofluorobenzene	*115*			*70-123*	*%REC*	*1*	*22-Sep-2019 01:28*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**4.95**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	**5.17**	J	**3.00**	**10.9**	**mg/Kg-dry**	1	01-Oct-2019 13:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM **ANALYTICAL REPORT**
Project: 60614104 Vacuum Glorietta West Unit WorkOrder:HS19090941
Sample ID: GWU-14 0-1 Lab ID:HS19090941-10
Collection Date: 18-Sep-2019 13:15 Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00052		0.00052	0.0052	mg/Kg-dry	1	20-Sep-2019 17:47
Ethylbenzene	< 0.00073		0.00073	0.0052	mg/Kg-dry	1	20-Sep-2019 17:47
Toluene	< 0.00062		0.00062	0.0052	mg/Kg-dry	1	20-Sep-2019 17:47
Xylenes, Total	< 0.0010		0.0010	0.0052	mg/Kg-dry	1	20-Sep-2019 17:47
Surr: 1,2-Dichloroethane-d4	*86.6*			*70-126*	*%REC*	*1*	*20-Sep-2019 17:47*
Surr: 4-Bromofluorobenzene	*100*			*70-130*	*%REC*	*1*	*20-Sep-2019 17:47*
Surr: Dibromofluoromethane	*87.2*			*70-130*	*%REC*	*1*	*20-Sep-2019 17:47*
Surr: Toluene-d8	*99.1*			*70-130*	*%REC*	*1*	*20-Sep-2019 17:47*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.053	mg/Kg-dry	1	22-Sep-2019 01:44
Surr: 4-Bromofluorobenzene	*117*			*70-123*	*%REC*	*1*	*22-Sep-2019 01:44*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**3.55**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	< 2.78		2.78	10.2	mg/Kg-dry	1	01-Oct-2019 13:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: GWU-15 0-1
Collection Date: 18-Sep-2019 13:31

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-11
Matrix:Solid

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00050		0.00050	0.0050	mg/Kg-dry	1	20-Sep-2019 18:12
Ethylbenzene	< 0.00070		0.00070	0.0050	mg/Kg-dry	1	20-Sep-2019 18:12
Toluene	< 0.00060		0.00060	0.0050	mg/Kg-dry	1	20-Sep-2019 18:12
Xylenes, Total	< 0.00099		0.00099	0.0050	mg/Kg-dry	1	20-Sep-2019 18:12
Surr: 1,2-Dichloroethane-d4	*84.6*			*70-126*	*%REC*	*1*	*20-Sep-2019 18:12*
Surr: 4-Bromofluorobenzene	*98.9*			*70-130*	*%REC*	*1*	*20-Sep-2019 18:12*
Surr: Dibromofluoromethane	*85.7*			*70-130*	*%REC*	*1*	*20-Sep-2019 18:12*
Surr: Toluene-d8	*100*			*70-130*	*%REC*	*1*	*20-Sep-2019 18:12*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.010		0.010	0.052	mg/Kg-dry	1	22-Sep-2019 02:00
Surr: 4-Bromofluorobenzene	*117*			*70-123*	*%REC*	*1*	*22-Sep-2019 02:00*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: DFF
Percent Moisture	**1.48**		**0.0100**	**0.0100**	**wt%**	1	24-Sep-2019 11:04
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 24-Sep-2019		Analyst: KVL
Chloride	< 2.73		2.73	9.95	mg/Kg-dry	1	01-Oct-2019 13:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
Sample ID: Trip Blank
Collection Date: 18-Sep-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19090941
Lab ID:HS19090941-12
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES - SW8260C	**Method:SW8260**						Analyst: PC
Benzene	< 0.60		0.60	5.0	ug/L	1	20-Sep-2019 19:27
Ethylbenzene	< 0.50		0.50	5.0	ug/L	1	20-Sep-2019 19:27
Toluene	< 0.50		0.50	5.0	ug/L	1	20-Sep-2019 19:27
Xylenes, Total	< 0.50		0.50	5.0	ug/L	1	20-Sep-2019 19:27
Surr: 1,2-Dichloroethane-d4	*102*			*70-126*	*%REC*	*1*	*20-Sep-2019 19:27*
Surr: 4-Bromofluorobenzene	*96.6*			*82-124*	*%REC*	*1*	*20-Sep-2019 19:27*
Surr: Dibromofluoromethane	*101*			*77-123*	*%REC*	*1*	*20-Sep-2019 19:27*
Surr: Toluene-d8	*100*			*82-127*	*%REC*	*1*	*20-Sep-2019 19:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

Batch ID: 3332 **Method:** VOLATILES BY SW8260C

SampID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS19090941-01	1	5.096 (g)	5 (mL)	0.98	Bulk (5030B)
HS19090941-02	1	5.118 (g)	5 (mL)	0.98	Bulk (5030B)
HS19090941-03	1	5.127 (g)	5 (mL)	0.98	Bulk (5030B)
HS19090941-07	1	5.007 (g)	5 (mL)	1	Bulk (5030B)
HS19090941-09	1	5.072 (g)	5 (mL)	0.99	Bulk (5030B)
HS19090941-10	1	4.993 (g)	5 (mL)	1	Bulk (5030B)
HS19090941-11	1	5.116 (g)	5 (mL)	0.98	Bulk (5030B)

Batch ID: 3333 **Method:** GASOLINE RANGE ORGANICS BY SW8015C **Prep:**

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS19090941-01	1	4.99 (g)	5 (mL)	1	Bulk (5030B)
HS19090941-02	1	4.79 (g)	5 (mL)	1.04	Bulk (5030B)
HS19090941-03	1	5.03 (g)	5 (mL)	0.99	Bulk (5030B)
HS19090941-07	1	4.83 (g)	5 (mL)	1.04	Bulk (5030B)
HS19090941-09	1	4.8 (g)	5 (mL)	1.04	Bulk (5030B)
HS19090941-10	1	4.84 (g)	5 (mL)	1.03	Bulk (5030B)
HS19090941-11	1	4.92 (g)	5 (mL)	1.02	Bulk (5030B)

Batch ID: 145606 **Method:** CHLORIDE BY SW-846 9250 **Prep:** CHLORIDE LEACH

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19090941-01	1	5.0314	50 (mL)	9.938
HS19090941-02	1	5.1621	50 (mL)	9.686
HS19090941-03	1	4.8069	50 (mL)	10.4
HS19090941-04	1	4.9813	50 (mL)	10.04
HS19090941-05	1	4.9269	50 (mL)	10.15
HS19090941-06	1	4.9223	50 (mL)	10.16
HS19090941-07	1	5.1607	50 (mL)	9.689
HS19090941-08	1	5.2101	50 (mL)	9.597
HS19090941-09	1	4.8101	50 (mL)	10.39
HS19090941-10	1	5.1017	50 (mL)	9.801
HS19090941-11	1	5.0981	50 (mL)	9.808

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glortetta West Unit
WorkOrder: HS19090941

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: 145606 (0)	**Test Name :** CHLORIDE BY SW-846 9250				**Matrix:** Solid	
HS19090941-01	GWU-09 0-1	18 Sep 2019 11:20		24 Sep 2019 14:38	01 Oct 2019 13:45	1
HS19090941-02	GWU-10 0-1	18 Sep 2019 11:35		24 Sep 2019 14:38	01 Oct 2019 13:45	1
HS19090941-03	GWU-11 0-1	18 Sep 2019 11:52		24 Sep 2019 14:38	01 Oct 2019 13:45	1
HS19090941-04	GWU-12 0-1	18 Sep 2019 12:08		24 Sep 2019 14:38	01 Oct 2019 15:33	10
HS19090941-05	GWU-12 1-2	18 Sep 2019 12:17		24 Sep 2019 14:38	01 Oct 2019 13:45	10
HS19090941-06	GWU-12 2-3	18 Sep 2019 12:22		24 Sep 2019 14:38	01 Oct 2019 13:46	1
HS19090941-07	GWU-12 3-4	18 Sep 2019 12:33		24 Sep 2019 14:38	01 Oct 2019 15:33	10
HS19090941-08	GWU-13 0-1	18 Sep 2019 12:48		24 Sep 2019 14:38	01 Oct 2019 13:46	1
HS19090941-09	GWU-13 1-2	18 Sep 2019 12:58		24 Sep 2019 14:38	01 Oct 2019 13:46	1
HS19090941-10	GWU-14 0-1	18 Sep 2019 13:15		24 Sep 2019 14:38	01 Oct 2019 13:46	1
HS19090941-11	GWU-15 0-1	18 Sep 2019 13:31		24 Sep 2019 14:38	01 Oct 2019 13:51	1
Batch ID: R346612 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Solid	
HS19090941-01	GWU-09 0-1	18 Sep 2019 11:20			20 Sep 2019 15:42	1
HS19090941-02	GWU-10 0-1	18 Sep 2019 11:35			20 Sep 2019 16:07	1
HS19090941-03	GWU-11 0-1	18 Sep 2019 11:52			20 Sep 2019 16:32	1
HS19090941-07	GWU-12 3-4	18 Sep 2019 12:33			20 Sep 2019 16:57	1
HS19090941-09	GWU-13 1-2	18 Sep 2019 12:58			20 Sep 2019 17:22	1
HS19090941-10	GWU-14 0-1	18 Sep 2019 13:15			20 Sep 2019 17:47	1
HS19090941-11	GWU-15 0-1	18 Sep 2019 13:31			20 Sep 2019 18:12	1
Batch ID: R346698 (0)	**Test Name :** VOLATILES - SW8260C				**Matrix:** Water	
HS19090941-12	Trip Blank	18 Sep 2019 00:00			20 Sep 2019 19:27	1
Batch ID: R346706 (0)	**Test Name :** GASOLINE RANGE ORGANICS BY SW8015C				**Matrix:** Solid	
HS19090941-01	GWU-09 0-1	18 Sep 2019 11:20			21 Sep 2019 22:00	1
HS19090941-02	GWU-10 0-1	18 Sep 2019 11:35			21 Sep 2019 22:16	1
HS19090941-03	GWU-11 0-1	18 Sep 2019 11:52			21 Sep 2019 22:32	1
Batch ID: R346707 (0)	**Test Name :** GASOLINE RANGE ORGANICS BY SW8015C				**Matrix:** Solid	
HS19090941-07	GWU-12 3-4	18 Sep 2019 12:33			21 Sep 2019 23:36	1
HS19090941-09	GWU-13 1-2	18 Sep 2019 12:58			22 Sep 2019 01:28	1
HS19090941-10	GWU-14 0-1	18 Sep 2019 13:15			22 Sep 2019 01:44	1
HS19090941-11	GWU-15 0-1	18 Sep 2019 13:31			22 Sep 2019 02:00	1

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glortetta West Unit
WorkOrder: HS19090941

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID: R346899 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Solid	
HS19090941-01	GWU-09 0-1	18 Sep 2019 11:20			24 Sep 2019 11:04	1
HS19090941-02	GWU-10 0-1	18 Sep 2019 11:35			24 Sep 2019 11:04	1
HS19090941-03	GWU-11 0-1	18 Sep 2019 11:52			24 Sep 2019 11:04	1
HS19090941-04	GWU-12 0-1	18 Sep 2019 12:08			24 Sep 2019 11:04	1
HS19090941-05	GWU-12 1-2	18 Sep 2019 12:17			24 Sep 2019 11:04	1
HS19090941-06	GWU-12 2-3	18 Sep 2019 12:22			24 Sep 2019 11:04	1
HS19090941-07	GWU-12 3-4	18 Sep 2019 12:33			24 Sep 2019 11:04	1
HS19090941-08	GWU-13 0-1	18 Sep 2019 12:48			24 Sep 2019 11:04	1
HS19090941-09	GWU-13 1-2	18 Sep 2019 12:58			24 Sep 2019 11:04	1
HS19090941-10	GWU-14 0-1	18 Sep 2019 13:15			24 Sep 2019 11:04	1
HS19090941-11	GWU-15 0-1	18 Sep 2019 13:31			24 Sep 2019 11:04	1

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: R346706 (0) **Instrument:** FID-14 **Method:** GASOLINE RANGE ORGANICS BY SW8015C

MBLK Sample ID: **MBLK-190921** Units: **mg/Kg** Analysis Date: **21-Sep-2019 14:22**
Client ID: Run ID: **FID-14_346706** SeqNo: **5262767** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	< 0.010	0.050								
Surr: 4-Bromofluorobenzene	*0.1114*	*0.0050*	*0.1*	*0*	*111*	*75 - 121*				

LCS Sample ID: **LCS-190921** Units: **mg/Kg** Analysis Date: **21-Sep-2019 14:06**
Client ID: Run ID: **FID-14_346706** SeqNo: **5262766** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.041	0.050	1	0	104	72 - 121				
Surr: 4-Bromofluorobenzene	*0.08879*	*0.0050*	*0.1*	*0*	*88.8*	*75 - 121*				

MS Sample ID: **HS19090789-02MS** Units: **mg/Kg** Analysis Date: **21-Sep-2019 15:19**
Client ID: Run ID: **FID-14_346706** SeqNo: **5262770** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9025	0.052	1.04	0	86.8	70 - 130				
Surr: 4-Bromofluorobenzene	*0.0772*	*0.0052*	*0.104*	*0*	*74.2*	*70 - 123*				

MSD Sample ID: **HS19090789-02MSD** Units: **mg/Kg** Analysis Date: **21-Sep-2019 15:35**
Client ID: Run ID: **FID-14_346706** SeqNo: **5262771** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.868	0.052	1.03	0	84.3	70 - 130	0.9025	3.9	30	
Surr: 4-Bromofluorobenzene	*0.07035*	*0.0052*	*0.103*	*0*	*68.3*	*70 - 123*	*0.0772*	*9.29*	*30*	S

The following samples were analyzed in this batch: HS19090941-01 HS19090941-02 HS19090941-03

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: R346707 (0) **Instrument:** FID-14 **Method:** GASOLINE RANGE ORGANICS BY SW8015C

MBLK Sample ID: **MBLK-1909211** Units: **mg/Kg** Analysis Date: **21-Sep-2019 23:20**
Client ID: Run ID: **FID-14_346707** SeqNo: **5262800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	< 0.010	0.050								
Surr: 4-Bromofluorobenzene	*0.1103*	*0.0050*	*0.1*	*0*	*110*	*75 - 121*				

LCS Sample ID: **LCS-1909211** Units: **mg/Kg** Analysis Date: **21-Sep-2019 22:48**
Client ID: Run ID: **FID-14_346707** SeqNo: **5262798** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.132	0.050	1	0	113	72 - 121				
Surr: 4-Bromofluorobenzene	*0.102*	*0.0050*	*0.1*	*0*	*102*	*75 - 121*				

LCSD Sample ID: **LCSD-1909211** Units: **mg/Kg** Analysis Date: **21-Sep-2019 23:04**
Client ID: Run ID: **FID-14_346707** SeqNo: **5262799** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.164	0.050	1	0	116	70 - 121	1.132	2.71	30	
Surr: 4-Bromofluorobenzene	*0.1047*	*0.0050*	*0.1*	*0*	*105*	*75 - 121*	*0.102*	*2.56*	*30*	

MS Sample ID: **HS19090941-07MS** Units: **mg/Kg** Analysis Date: **21-Sep-2019 23:52**
Client ID: **GWU-12 3-4** Run ID: **FID-14_346707** SeqNo: **5262802** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.095	0.052	1.03	0	106	70 - 130				
Surr: 4-Bromofluorobenzene	*0.09405*	*0.0052*	*0.103*	*0*	*91.3*	*70 - 123*				

MSD Sample ID: **HS19090941-07MSD** Units: **mg/Kg** Analysis Date: **22-Sep-2019 00:08**
Client ID: **GWU-12 3-4** Run ID: **FID-14_346707** SeqNo: **5262803** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.026	0.051	1.02	0	101	70 - 130	1.095	6.53	30	
Surr: 4-Bromofluorobenzene	*0.08149*	*0.0051*	*0.102*	*0*	*79.9*	*70 - 123*	*0.09405*	*14.3*	*30*	

The following samples were analyzed in this batch: HS19090941-07 HS19090941-09 HS19090941-10 HS19090941-11

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: R346612 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS1-092019** Units: **ug/Kg** Analysis Date: **20-Sep-2019 09:50**
Client ID: Run ID: **VOA5_346612** SeqNo: **5260836** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.50	5.0								
Ethylbenzene	< 0.70	5.0								
Toluene	< 0.60	5.0								
Xylenes, Total	< 1.0	5.0								
Surr: 1,2-Dichloroethane-d4	*43.28*	*0*	*50*	*0*	*86.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*50.28*	*0*	*50*	*0*	*101*	*80 - 120*				
Surr: Dibromofluoromethane	*43.66*	*0*	*50*	*0*	*87.3*	*80 - 119*				
Surr: Toluene-d8	*47.79*	*0*	*50*	*0*	*95.6*	*81 - 118*				

LCS Sample ID: **VLCSS1-092019** Units: **ug/Kg** Analysis Date: **20-Sep-2019 09:00**
Client ID: Run ID: **VOA5_346612** SeqNo: **5260835** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	47.85	5.0	50	0	95.7	75 - 124				
Ethylbenzene	55.11	5.0	50	0	110	70 - 123				
Toluene	50.5	5.0	50	0	101	76 - 122				
Xylenes, Total	166.7	5.0	150	0	111	77 - 128				
Surr: 1,2-Dichloroethane-d4	*45.03*	*0*	*50*	*0*	*90.1*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*50.82*	*0*	*50*	*0*	*102*	*80 - 120*				
Surr: Dibromofluoromethane	*46.26*	*0*	*50*	*0*	*92.5*	*80 - 119*				
Surr: Toluene-d8	*47.86*	*0*	*50*	*0*	*95.7*	*81 - 118*				

MS Sample ID: **HS19090787-01MS** Units: **ug/Kg** Analysis Date: **20-Sep-2019 11:06**
Client ID: Run ID: **VOA5_346612** SeqNo: **5261045** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	26.37	5.0	50	0	52.7	70 - 130				S
Ethylbenzene	30.27	5.0	50	0	60.5	70 - 130				S
Toluene	27.25	5.0	50	0	54.5	70 - 130				S
Xylenes, Total	90.04	5.0	150	0	60.0	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*47.26*	*0*	*50*	*0*	*94.5*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.23*	*0*	*50*	*0*	*102*	*70 - 130*				
Surr: Dibromofluoromethane	*46.36*	*0*	*50*	*0*	*92.7*	*70 - 130*				
Surr: Toluene-d8	*48.01*	*0*	*50*	*0*	*96.0*	*70 - 130*				

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: R346612 (0) **Instrument: VOA5** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS19090787-01MSD** Units: **ug/Kg** Analysis Date: **20-Sep-2019 11:31**
Client ID: Run ID: **VOA5_346612** SeqNo: **5261046** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	29.79	5.1	51	0	58.4	70 - 130	26.37	12.2	30	S
Ethylbenzene	33.16	5.1	51	0	65.0	70 - 130	30.27	9.11	30	S
Toluene	30.61	5.1	51	0	60.0	70 - 130	27.25	11.6	30	S
Xylenes, Total	99.52	5.1	153	0	65.0	70 - 130	90.04	10	30	S
Surr: 1,2-Dichloroethane-d4	*49*	*0*	*51*	*0*	*96.1*	*70 - 126*	*47.26*	*3.62*	*30*	
Surr: 4-Bromofluorobenzene	*53.2*	*0*	*51*	*0*	*104*	*70 - 130*	*51.23*	*3.79*	*30*	
Surr: Dibromofluoromethane	*47.94*	*0*	*51*	*0*	*94.0*	*70 - 130*	*46.36*	*3.35*	*30*	
Surr: Toluene-d8	*49.64*	*0*	*51*	*0*	*97.3*	*70 - 130*	*48.01*	*3.33*	*30*	

The following samples were analyzed in this batch: HS19090941-01 HS19090941-02 HS19090941-03 HS19090941-07 HS19090941-09 HS19090941-10 HS19090941-11

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: R346698 (0) **Instrument: VOA9** **Method: VOLATILES - SW8260C**

MBLK Sample ID: **VBLKW-190920** Units: **ug/L** Analysis Date: **20-Sep-2019 14:58**
Client ID: Run ID: **VOA9_346698** SeqNo: **5262597** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.60	5.0								
Ethylbenzene	< 0.50	5.0								
Toluene	< 0.50	5.0								
Xylenes, Total	< 0.50	5.0								
Surr: 1,2-Dichloroethane-d4	*52.21*	*0*	*50*	*0*	*104*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*47.26*	*0*	*50*	*0*	*94.5*	*82 - 115*				
Surr: Dibromofluoromethane	*50.92*	*0*	*50*	*0*	*102*	*73 - 126*				
Surr: Toluene-d8	*49.71*	*0*	*50*	*0*	*99.4*	*81 - 120*				

LCS Sample ID: **VLCSW-190920** Units: **ug/L** Analysis Date: **20-Sep-2019 14:09**
Client ID: Run ID: **VOA9_346698** SeqNo: **5262596** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.29	5.0	20	0	96.5	74 - 120				
Ethylbenzene	19.49	5.0	20	0	97.4	77 - 117				
Toluene	19.24	5.0	20	0	96.2	77 - 118				
Xylenes, Total	59.09	5.0	60	0	98.5	75 - 122				
Surr: 1,2-Dichloroethane-d4	*50.83*	*0*	*50*	*0*	*102*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.19*	*0*	*50*	*0*	*100*	*82 - 115*				
Surr: Dibromofluoromethane	*50.41*	*0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*50.95*	*0*	*50*	*0*	*102*	*81 - 120*				

MS Sample ID: **HS19090904-01MS** Units: **ug/L** Analysis Date: **20-Sep-2019 17:00**
Client ID: Run ID: **VOA9_346698** SeqNo: **5262599** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.34	5.0	20	0	107	70 - 127				
Ethylbenzene	22.91	5.0	20	0	115	70 - 124				
Toluene	21.43	5.0	20	0	107	70 - 123				
Xylenes, Total	65.86	5.0	60	0	110	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.65*	*0*	*50*	*0*	*99.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*48.83*	*0*	*50*	*0*	*97.7*	*82 - 124*				
Surr: Dibromofluoromethane	*50.17*	*0*	*50*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*50.26*	*0*	*50*	*0*	*101*	*82 - 127*				

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: R346698 (0) **Instrument: VOA9** **Method: VOLATILES - SW8260C**

MSD Sample ID: **HS19090904-01MSD** Units: **ug/L** Analysis Date: **20-Sep-2019 17:24**
Client ID: Run ID: **VOA9_346698** SeqNo: **5262600** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	20.41	5.0	20	0	102	70 - 127	21.34	4.45	20	
Ethylbenzene	21.14	5.0	20	0	106	70 - 124	22.91	8.07	20	
Toluene	19.99	5.0	20	0	100.0	70 - 123	21.43	6.94	20	
Xylenes, Total	62.51	5.0	60	0	104	70 - 130	65.86	5.22	20	
Surr: 1,2-Dichloroethane-d4	*50.46*	*0*	*50*	*0*	*101*	*70 - 126*	*49.65*	*1.63*	*20*	
Surr: 4-Bromofluorobenzene	*49.35*	*0*	*50*	*0*	*98.7*	*82 - 124*	*48.83*	*1.08*	*20*	
Surr: Dibromofluoromethane	*51.66*	*0*	*50*	*0*	*103*	*77 - 123*	*50.17*	*2.92*	*20*	
Surr: Toluene-d8	*49.91*	*0*	*50*	*0*	*99.8*	*82 - 127*	*50.26*	*0.685*	*20*	

The following samples were analyzed in this batch: HS19090941-12

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: 145606 (0) **Instrument: Gall01** **Method: CHLORIDE BY SW-846 9250**

MBLK Sample ID: **MBLK-145606** Units: **mg/Kg** Analysis Date: **01-Oct-2019 13:43**
Client ID: Run ID: **Gall01_347482** SeqNo: **5279541** PrepDate: **24-Sep-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 2.74	10.0								

LCS Sample ID: **LCS-145606** Units: **mg/Kg** Analysis Date: **01-Oct-2019 13:43**
Client ID: Run ID: **Gall01_347482** SeqNo: **5279540** PrepDate: **24-Sep-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	198.3	10.0	200	0	99.1	80 - 120				

LCSD Sample ID: **LCSD-145606** Units: **mg/Kg** Analysis Date: **01-Oct-2019 15:34**
Client ID: Run ID: **Gall01_347482** SeqNo: **5279555** PrepDate: **24-Sep-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	200.4	10.0	200	0	100	80 - 120	198.3	1.08	30	

The following samples were analyzed in this batch:

HS19090941-01	HS19090941-02	HS19090941-03	HS19090941-04
HS19090941-05	HS19090941-06	HS19090941-07	HS19090941-08
HS19090941-09	HS19090941-10	HS19090941-11	

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: HS19090941

QC BATCH REPORT

Batch ID: R346899 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS19090956-02DUP** Units: **wt%** Analysis Date: **24-Sep-2019 11:04**
Client ID: Run ID: **Balance1_346899** SeqNo: **5267070** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	7.8	0.0100					7.73	0.901	20	

The following samples were analyzed in this batch:

HS19090941-01	HS19090941-02	HS19090941-03	HS19090941-04
HS19090941-05	HS19090941-06	HS19090941-07	HS19090941-08
HS19090941-09	HS19090941-10	HS19090941-11	

ALS Houston, US Date: 02-Oct-19

Client: AECOM
Project: 60614104 Vacuum Glorietta West Unit
WorkOrder: **HS19090941**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
Date	
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-141	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 02-Oct-19

Sample Receipt Checklist

Client Name: AECOM-Houston Date/Time Received: **19-Sep-2019 08:30**

Work Order: HS19090941 Received by: **AC**

Checklist completed by: *Paresh M. Giga* eSignature 19-Sep-2019 Date

Reviewed by: *Dane J. Wacasey* eSignature 23-Sep-2019 Date

Matrices: **Solid** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:None
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.3c U/C	IR25	
Cooler(s)/Kit(s):	44794		
Date/Time sample(s) sent to storage:	9/19/19 20:35		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: GWU-09 0-1; GWU-10 0-1; GWU-11 0-1
GWU-14 0-1 & GWU-15 0-1
Labels missing depths.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

Eurofins TestAmerica, Houston
6310 Rothway Street
Houston, TX 77040
Phone (713) 690-4444 Fax (713) 690-5646

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information	Sampler: RAPHAEL FRANCO	Lab PM: Kudchadkar, Sachin G	Carrier Tracking No(s):	COC No: 600-69310-18903.1
Client Contact: Mr. Wallace Gilmore	Phone: 830-683-7816	E-Mail: sachin.kudchadkar@testamericainc.com		Page: Page
Company: AECOM				Job #:
Address: 19219 Katy Freeway Suite 100	Due Date Requested:			
City: Houston	TAT Requested (days): STAT STANDARD			
State, Zip: TX, 77094				
Phone: 713-520-990(Tel) 713-520-680(Fax)	PO #:			
Email: wallace.gilmore@aecom.com	WO #:			
Project Name: Chevron	Project #: 60008660			
Site: VACCUM GLORIETTA WEST UNIT	SSOW#:			

Analysis Requested

Columns: Field Filtered Sample (Yes or No); Perform MS/MSD (Yes or No); TX_1005 - (TPH; 8260B - BTEX Only; 9056_ORGFM_28D - Chloride; 1311/6010B, 7470A - TCLP metals; moisture; Chloride / 8015 TPH-DRO-ORO/MOIST%; 8260 BTEX/8015 TPH-GRO; Total Number of containers

Preservation Code: N N N N N

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	moisture	Chloride / 8015 TPH-DRO-ORO/MOIST%	8260 BTEX/8015 TPH-GRO
GWU-09 0-1	9-18-19	1120		Solid		X	X
GWU-10 0-1	↓	1135		Solid		X	X
GWU-11 0-1	↓	1152		Solid		X	X
GWU-12 0-1	↓	1208		Solid		X	
GWU-12 1-2	↓	1217		Solid		X	
GWU-12 ~~3-4~~ 2-3	↓	1222		Solid		X	
GWU-12 3-4	↓	1233		Solid	ⓧ	X	X
GWU-13 0-1	↓	1248		Solid		X	
GWU-13 1-2	↓	1258		Solid		X	X
GWU-14 0-1	↓	1315		Solid		X	X
GWU-15 0-1	↓	1331		Solid		X	X

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Spec

HS1909094
AECOM
Vaccum Glorietta West Unit

Possible Hazard Identification: [X] Non-Hazard [ ] Flammable [ ] Skin Irritant [ ] Poison B [ ] Unknown [ ] Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): [ ] Return To Client [X] Disposal By Lab [ ] Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	9-18-19/1630	AECOM	AC	9/19/19 08:30	ALS

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: U/C 1.3 IR#25 CF 0.0 44794

Ver: 01/16/2019

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44794

CUSTODY SEAL

Date: 9-18-19 Time:

Name:

Company: AECOM-HOUSTON

Seal Broken By: SM

Date: 09/19/19

44794 SEP 19 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

44794

ORIGIN ID:SGRA (573) 397-8777
JAMES LOVELY (GUEST)
LA QUINTA INN C/O AECOM
3312 N. LOVINGTON HIGHWAY
HOBBS, NM 88240
UNITED STATES US

SHIP DATE: 13SEP19
ACTWGT: 1.00 LB MAN
CAD: 3001307CAFE3
DIMS: 19x16x13 IN

10 CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5666
REF: CEMC HOBBS NM - BO 67596 - DW

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7837 9610

THU - 19 SEP 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

Part # 156297-435 RRD22 EXP 05/20

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 30, 2020

Wallace Gilmore
AECOM
19219 Katy Freeway
Suite 100
Houston, TX 77094

Work Order: **HS20061021**

Laboratory Results for: **60596678 Vacuum Glorietta West Unit**

Dear Wallace Gilmore,

ALS Environmental received 20 sample(s) on Jun 20, 2020 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Dane J. Wacasey

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Work Order: HS20061021

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20061021-01	GWU-16 0-1	Soil		19-Jun-2020 10:10	20-Jun-2020 09:45	
HS20061021-02	GWU-16 1-2	Soil		19-Jun-2020 10:15	20-Jun-2020 09:45	
HS20061021-03	GWU-16 2-3	Soil		19-Jun-2020 10:20	20-Jun-2020 09:45	
HS20061021-04	GWU-16 3-4	Soil		19-Jun-2020 10:25	20-Jun-2020 09:45	
HS20061021-05	GWU-16 4-5	Soil		19-Jun-2020 10:30	20-Jun-2020 09:45	
HS20061021-06	GWU-17 0-1	Soil		19-Jun-2020 10:45	20-Jun-2020 09:45	
HS20061021-07	GWU-17 1-2	Soil		19-Jun-2020 10:50	20-Jun-2020 09:45	
HS20061021-08	GWU-17 2-3	Soil		19-Jun-2020 10:55	20-Jun-2020 09:45	
HS20061021-09	GWU-17 3-4	Soil		19-Jun-2020 11:00	20-Jun-2020 09:45	
HS20061021-10	GWU-17 4-5	Soil		19-Jun-2020 11:05	20-Jun-2020 09:45	
HS20061021-11	GWU-18 0-1	Soil		19-Jun-2020 11:25	20-Jun-2020 09:45	
HS20061021-12	GWU-18 1-2	Soil		19-Jun-2020 11:30	20-Jun-2020 09:45	
HS20061021-13	GWU-18 2-3	Soil		19-Jun-2020 11:35	20-Jun-2020 09:45	
HS20061021-14	GWU-18 3-4	Soil		19-Jun-2020 11:40	20-Jun-2020 09:45	
HS20061021-15	GWU-18 4-5	Soil		19-Jun-2020 11:45	20-Jun-2020 09:45	
HS20061021-16	GWU-19 0-1	Soil		19-Jun-2020 12:10	20-Jun-2020 09:45	
HS20061021-17	GWU-19 1-2	Soil		19-Jun-2020 12:15	20-Jun-2020 09:45	
HS20061021-18	GWU-19 2-3	Soil		19-Jun-2020 12:20	20-Jun-2020 09:45	
HS20061021-19	GWU-19 3-4	Soil		19-Jun-2020 12:25	20-Jun-2020 09:45	
HS20061021-20	GWU-19 4-5	Soil		19-Jun-2020 12:30	20-Jun-2020 09:45	

ALS Houston, US Date: 30-Jun-20

Client: AECOM **CASE NARRATIVE**
Project: 60596678 Vacuum Glorietta West Unit
Work Order: HS20061021

GC Semivolatiles by Method SW8015M

Batch ID: 154739

Sample ID: HS20060980-01MS

• MS and MSD are for an unrelated sample

GC Volatiles by Method SW8015

Batch ID: R363801

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R363732

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method ASTM D2216

Batch ID: R364180

Sample ID: HS20061203-01DUP

• DUP is for an unrelated sample

Batch ID: R364177

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9250

Batch ID: 154883,154884

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-16 0-1
Collection Date: 19-Jun-2020 10:10

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-01
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**1.86**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**10.2**		**2.76**	**10.1**	**mg/Kg-dry**	1	27-Jun-2020 10:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-16 1-2
Collection Date: 19-Jun-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-02
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**5.54**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**134**		**2.89**	**10.5**	**mg/Kg-dry**	1	27-Jun-2020 10:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-16 2-3
Collection Date: 19-Jun-2020 10:20

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-03
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**7.77**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**24.7**		**2.96**	**10.8**	**mg/Kg-dry**	1	27-Jun-2020 10:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-16 3-4
Collection Date: 19-Jun-2020 10:25

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-04
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00051		0.00051	0.0051	mg/Kg-dry	1	23-Jun-2020 14:10
Ethylbenzene	< 0.00071		0.00071	0.0051	mg/Kg-dry	1	23-Jun-2020 14:10
Toluene	< 0.00061		0.00061	0.0051	mg/Kg-dry	1	23-Jun-2020 14:10
Xylenes, Total	< 0.0010		0.0010	0.0051	mg/Kg-dry	1	23-Jun-2020 14:10
Surr: 1,2-Dichloroethane-d4	*98.2*			*70-126*	*%REC*	*1*	*23-Jun-2020 14:10*
Surr: 4-Bromofluorobenzene	*104*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:10*
Surr: Dibromofluoromethane	*104*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:10*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:10*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.056	mg/Kg-dry	1	23-Jun-2020 20:06
Surr: 4-Bromofluorobenzene	*114*			*70-123*	*%REC*	*1*	*23-Jun-2020 20:06*
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3541 / 23-Jun-2020		Analyst: PVL
TPH (Diesel Range)	**5.2**		**0.52**	**1.8**	**mg/Kg-dry**	1	23-Jun-2020 15:31
TPH (Motor Oil Range)	**11**		**0.52**	**3.5**	**mg/Kg-dry**	1	23-Jun-2020 15:31
Surr: 2-Fluorobiphenyl	*77.4*			*60-129*	*%REC*	*1*	*23-Jun-2020 15:31*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**3.55**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**28.3**		**2.83**	**10.3**	**mg/Kg-dry**	1	27-Jun-2020 10:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-16 4-5
Collection Date: 19-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-05
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**7.44**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**39.5**		**2.93**	**10.7**	**mg/Kg-dry**	1	27-Jun-2020 10:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-17 0-1
Collection Date: 19-Jun-2020 10:45

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-06
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**2.19**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**62.8**		**2.78**	**10.2**	**mg/Kg-dry**	1	27-Jun-2020 11:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-17 1-2
Collection Date: 19-Jun-2020 10:50

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-07
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**11.5**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**287**		**3.05**	**11.1**	**mg/Kg-dry**	1	27-Jun-2020 11:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-17 2-3
Collection Date: 19-Jun-2020 10:55

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-08
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**9.46**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:17
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**273**		**3.00**	**10.9**	**mg/Kg-dry**	1	27-Jun-2020 11:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-17 3-4
Collection Date: 19-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-09
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00057		0.00057	0.0057	mg/Kg-dry	1	23-Jun-2020 14:33
Ethylbenzene	< 0.00079		0.00079	0.0057	mg/Kg-dry	1	23-Jun-2020 14:33
Toluene	< 0.00068		0.00068	0.0057	mg/Kg-dry	1	23-Jun-2020 14:33
Xylenes, Total	< 0.0011		0.0011	0.0057	mg/Kg-dry	1	23-Jun-2020 14:33
Surr: 1,2-Dichloroethane-d4	*101*			*70-126*	*%REC*	*1*	*23-Jun-2020 14:33*
Surr: 4-Bromofluorobenzene	*102*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:33*
Surr: Dibromofluoromethane	*103*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:33*
Surr: Toluene-d8	*102*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:33*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.057	mg/Kg-dry	1	23-Jun-2020 22:15
Surr: 4-Bromofluorobenzene	*115*			*70-123*	*%REC*	*1*	*23-Jun-2020 22:15*
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3541 / 23-Jun-2020		Analyst: PVL
TPH (Diesel Range)	**1.3**	J	**0.56**	**1.9**	**mg/Kg-dry**	1	23-Jun-2020 17:32
TPH (Motor Oil Range)	**12**		**0.56**	**3.8**	**mg/Kg-dry**	1	23-Jun-2020 17:32
Surr: 2-Fluorobiphenyl	*75.3*			*60-129*	*%REC*	*1*	*23-Jun-2020 17:32*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**11.7**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**213**		**3.09**	**11.3**	**mg/Kg-dry**	1	27-Jun-2020 11:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-17 4-5
Collection Date: 19-Jun-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-10
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**6.54**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**344**		**2.89**	**10.6**	**mg/Kg-dry**	1	27-Jun-2020 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-18 0-1
Collection Date: 19-Jun-2020 11:25

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-11
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**2.65**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**89.8**		**2.78**	**10.2**	**mg/Kg-dry**	1	27-Jun-2020 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-18 1-2
Collection Date: 19-Jun-2020 11:30

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-12
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**3.68**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**31.5**		**2.83**	**10.3**	**mg/Kg-dry**	1	27-Jun-2020 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-18 2-3
Collection Date: 19-Jun-2020 11:35

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-13
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**4.83**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**45.1**		**2.86**	**10.4**	**mg/Kg-dry**	1	27-Jun-2020 11:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-18 3-4
Collection Date: 19-Jun-2020 11:40

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-14
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00051		0.00051	0.0051	mg/Kg-dry	1	23-Jun-2020 14:55
Ethylbenzene	< 0.00072		0.00072	0.0051	mg/Kg-dry	1	23-Jun-2020 14:55
Toluene	< 0.00062		0.00062	0.0051	mg/Kg-dry	1	23-Jun-2020 14:55
Xylenes, Total	< 0.0010		0.0010	0.0051	mg/Kg-dry	1	23-Jun-2020 14:55
Surr: 1,2-Dichloroethane-d4	*94.3*			*70-126*	*%REC*	*1*	*23-Jun-2020 14:55*
Surr: 4-Bromofluorobenzene	*98.8*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:55*
Surr: Dibromofluoromethane	*100*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:55*
Surr: Toluene-d8	*97.7*			*70-130*	*%REC*	*1*	*23-Jun-2020 14:55*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.057	mg/Kg-dry	1	23-Jun-2020 22:31
Surr: 4-Bromofluorobenzene	*115*			*70-123*	*%REC*	*1*	*23-Jun-2020 22:31*
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3541 / 23-Jun-2020		Analyst: PVL
TPH (Diesel Range)	**4.6**		**0.53**	**1.8**	**mg/Kg-dry**	1	24-Jun-2020 10:17
TPH (Motor Oil Range)	**9.5**		**0.53**	**3.6**	**mg/Kg-dry**	1	24-Jun-2020 10:17
Surr: 2-Fluorobiphenyl	*60.1*			*60-129*	*%REC*	*1*	*24-Jun-2020 10:17*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**6.54**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**10.1**	J	**2.90**	**10.6**	**mg/Kg-dry**	1	27-Jun-2020 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-18 4-5
Collection Date: 19-Jun-2020 11:45

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-15
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**9.81**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	< 2.99		2.99	10.9	mg/Kg-dry	1	27-Jun-2020 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-19 0-1
Collection Date: 19-Jun-2020 12:10

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-16
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**2.33**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**5.47**	J	**2.78**	**10.2**	**mg/Kg-dry**	1	27-Jun-2020 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-19 1-2
Collection Date: 19-Jun-2020 12:15

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-17
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**3.90**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**9.80**	J	**2.84**	**10.4**	**mg/Kg-dry**	1	27-Jun-2020 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-19 2-3
Collection Date: 19-Jun-2020 12:20

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-18
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**4.39**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**6.42**	J	**2.81**	**10.3**	**mg/Kg-dry**	1	27-Jun-2020 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-19 3-4
Collection Date: 19-Jun-2020 12:25

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-19
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		**Method:SW8260**					Analyst: WLR
Benzene	< 0.00051		0.00051	0.0051	mg/Kg-dry	1	23-Jun-2020 15:18
Ethylbenzene	< 0.00072		0.00072	0.0051	mg/Kg-dry	1	23-Jun-2020 15:18
Toluene	< 0.00062		0.00062	0.0051	mg/Kg-dry	1	23-Jun-2020 15:18
Xylenes, Total	< 0.0010		0.0010	0.0051	mg/Kg-dry	1	23-Jun-2020 15:18
Surr: 1,2-Dichloroethane-d4	*100*			*70-126*	*%REC*	*1*	*23-Jun-2020 15:18*
Surr: 4-Bromofluorobenzene	*98.6*			*70-130*	*%REC*	*1*	*23-Jun-2020 15:18*
Surr: Dibromofluoromethane	*101*			*70-130*	*%REC*	*1*	*23-Jun-2020 15:18*
Surr: Toluene-d8	*97.6*			*70-130*	*%REC*	*1*	*23-Jun-2020 15:18*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**					Analyst: QX
Gasoline Range Organics	< 0.011		0.011	0.057	mg/Kg-dry	1	23-Jun-2020 22:47
Surr: 4-Bromofluorobenzene	*115*			*70-123*	*%REC*	*1*	*23-Jun-2020 22:47*
TPH DRO/ORO BY SW8015C		**Method:SW8015M**			Prep:SW3541 / 23-Jun-2020		Analyst: PVL
TPH (Diesel Range)	**3.5**		**0.53**	**1.8**	**mg/Kg-dry**	1	23-Jun-2020 18:20
TPH (Motor Oil Range)	**7.9**		**0.53**	**3.6**	**mg/Kg-dry**	1	23-Jun-2020 18:20
Surr: 2-Fluorobiphenyl	*72.8*			*60-129*	*%REC*	*1*	*23-Jun-2020 18:20*
MOISTURE - ASTM D2216		**Method:ASTM D2216**					Analyst: KAH
Percent Moisture	**6.60**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250		**Method:SW9250**			Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**10.3**	J	**2.89**	**10.5**	**mg/Kg-dry**	1	27-Jun-2020 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
Sample ID: GWU-19 4-5
Collection Date: 19-Jun-2020 12:30

ANALYTICAL REPORT
WorkOrder:HS20061021
Lab ID:HS20061021-20
Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
MOISTURE - ASTM D2216	**Method:ASTM D2216**						Analyst: KAH
Percent Moisture	**8.58**		**0.0100**	**0.0100**	**wt%**	1	29-Jun-2020 14:53
CHLORIDE BY SW-846 9250	**Method:SW9250**				Prep:ASTM Leachate / 26-Jun-2020		Analyst: MZD
Chloride	**24.1**		**2.99**	**10.9**	**mg/Kg-dry**	1	27-Jun-2020 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

Batch ID: 3788 **Start Date:** 22 Jun 2020 08:02 **End Date:** 22 Jun 2020 08:02
Method: VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS20061021-04	1	5.1 (g)	5 (mL)	0.98	Bulk (5030B)
HS20061021-09	1	5.013 (g)	5 (mL)	1	Bulk (5030B)
HS20061021-14	1	5.188 (g)	5 (mL)	0.96	Bulk (5030B)
HS20061021-19	1	5.214 (g)	5 (mL)	0.96	Bulk (5030B)

Batch ID: 3789 **Start Date:** 23 Jun 2020 09:51 **End Date:** 23 Jun 2020 09:51
Method: GASOLINE RANGE ORGANICS BY SW8015C **Prep Code:**

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS20061021-04	1	4.619 (g)	5 (mL)	1.08	Bulk (5030B)
HS20061021-09	1	4.952 (g)	5 (mL)	1.01	Bulk (5030B)
HS20061021-14	1	4.707 (g)	5 (mL)	1.06	Bulk (5030B)
HS20061021-19	1	4.737 (g)	5 (mL)	1.06	Bulk (5030B)

Batch ID: 154739 **Start Date:** 23 Jun 2020 07:19 **End Date:** 23 Jun 2020 11:30
Method: SOPREP: 3541 TPH **Prep Code:** 8015SPR_LL

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061021-04	1	30.09 (g)	1 (mL)	0.03323
HS20061021-09	1	30.14 (g)	1 (mL)	0.03318
HS20061021-14	1	30.06 (g)	1 (mL)	0.03327
HS20061021-19	1	30.11 (g)	1 (mL)	0.03321

Batch ID: 154883 **Start Date:** 26 Jun 2020 08:59 **End Date:** 26 Jun 2020 15:00
Method: SOLID CHLORIDE PREP **Prep Code:** CHLORIDE LEACH

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061021-01		5.0594 (grams)	50 (mL)	9.883
HS20061021-02		5.022 (grams)	50 (mL)	9.956
HS20061021-03		5.0106 (grams)	50 (mL)	9.979
HS20061021-04		5.0265 (grams)	50 (mL)	9.947
HS20061021-05		5.0446 (grams)	50 (mL)	9.912

ALS Houston, US

Date: 30-Jun-20

Weight / Prep Log

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

Batch ID: 154884 **Start Date:** 26 Jun 2020 09:00 **End Date:** 26 Jun 2020 12:00
Method: SOLID CHLORIDE PREP **Prep Code:** CHLORIDE LEACH

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061021-06		5.0333 (grams)	50 (mL)	9.934
HS20061021-07		5.0765 (grams)	50 (mL)	9.849
HS20061021-08		5.0476 (grams)	50 (mL)	9.906
HS20061021-09		5.0254 (grams)	50 (mL)	9.949
HS20061021-10		5.0683 (grams)	50 (mL)	9.865
HS20061021-11		5.0586 (grams)	50 (mL)	9.884
HS20061021-12		5.0217 (grams)	50 (mL)	9.957
HS20061021-13		5.0297 (grams)	50 (mL)	9.941
HS20061021-14		5.0492 (grams)	50 (mL)	9.903
HS20061021-15		5.0792 (grams)	50 (mL)	9.844
HS20061021-16		5.0412 (grams)	50 (mL)	9.918
HS20061021-17		5.0196 (grams)	50 (mL)	9.961
HS20061021-18		5.097 (grams)	50 (mL)	9.81
HS20061021-19		5.0838 (grams)	50 (mL)	9.835
HS20061021-20		5.0089 (grams)	50 (mL)	9.982

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154739 (0)	**Test Name :** TPH DRO/ORO BY SW8015C				**Matrix:** Soil	
HS20061021-04	GWU-16 3-4	19 Jun 2020 10:25		23 Jun 2020 07:19	23 Jun 2020 15:31	1
HS20061021-09	GWU-17 3-4	19 Jun 2020 11:00		23 Jun 2020 07:19	23 Jun 2020 17:32	1
HS20061021-14	GWU-18 3-4	19 Jun 2020 11:40		23 Jun 2020 07:19	24 Jun 2020 10:17	1
HS20061021-19	GWU-19 3-4	19 Jun 2020 12:25		23 Jun 2020 07:19	23 Jun 2020 18:20	1
Batch ID: 154883 (0)	**Test Name :** CHLORIDE BY SW-846 9250				**Matrix:** Soil	
HS20061021-01	GWU-16 0-1	19 Jun 2020 10:10		26 Jun 2020 08:59	27 Jun 2020 10:42	1
HS20061021-02	GWU-16 1-2	19 Jun 2020 10:15		26 Jun 2020 08:59	27 Jun 2020 10:42	1
HS20061021-03	GWU-16 2-3	19 Jun 2020 10:20		26 Jun 2020 08:59	27 Jun 2020 10:42	1
HS20061021-04	GWU-16 3-4	19 Jun 2020 10:25		26 Jun 2020 08:59	27 Jun 2020 10:46	1
HS20061021-05	GWU-16 4-5	19 Jun 2020 10:30		26 Jun 2020 08:59	27 Jun 2020 10:47	1
Batch ID: 154884 (0)	**Test Name :** CHLORIDE BY SW-846 9250				**Matrix:** Soil	
HS20061021-06	GWU-17 0-1	19 Jun 2020 10:45		26 Jun 2020 09:00	27 Jun 2020 11:58	1
HS20061021-07	GWU-17 1-2	19 Jun 2020 10:50		26 Jun 2020 09:00	27 Jun 2020 11:58	1
HS20061021-08	GWU-17 2-3	19 Jun 2020 10:55		26 Jun 2020 09:00	27 Jun 2020 11:58	1
HS20061021-09	GWU-17 3-4	19 Jun 2020 11:00		26 Jun 2020 09:00	27 Jun 2020 11:58	1
HS20061021-10	GWU-17 4-5	19 Jun 2020 11:05		26 Jun 2020 09:00	27 Jun 2020 11:59	1
HS20061021-11	GWU-18 0-1	19 Jun 2020 11:25		26 Jun 2020 09:00	27 Jun 2020 11:59	1
HS20061021-12	GWU-18 1-2	19 Jun 2020 11:30		26 Jun 2020 09:00	27 Jun 2020 11:59	1
HS20061021-13	GWU-18 2-3	19 Jun 2020 11:35		26 Jun 2020 09:00	27 Jun 2020 11:59	1
HS20061021-14	GWU-18 3-4	19 Jun 2020 11:40		26 Jun 2020 09:00	27 Jun 2020 12:00	1
HS20061021-15	GWU-18 4-5	19 Jun 2020 11:45		26 Jun 2020 09:00	27 Jun 2020 12:00	1
HS20061021-16	GWU-19 0-1	19 Jun 2020 12:10		26 Jun 2020 09:00	27 Jun 2020 12:00	1
HS20061021-17	GWU-19 1-2	19 Jun 2020 12:15		26 Jun 2020 09:00	27 Jun 2020 12:00	1
HS20061021-18	GWU-19 2-3	19 Jun 2020 12:20		26 Jun 2020 09:00	27 Jun 2020 12:00	1
HS20061021-19	GWU-19 3-4	19 Jun 2020 12:25		26 Jun 2020 09:00	27 Jun 2020 12:00	1
HS20061021-20	GWU-19 4-5	19 Jun 2020 12:30		26 Jun 2020 09:00	27 Jun 2020 12:00	1
Batch ID: R363732 (0)	**Test Name :** VOLATILES BY SW8260C				**Matrix:** Soil	
HS20061021-04	GWU-16 3-4	19 Jun 2020 10:25			23 Jun 2020 14:10	1
HS20061021-09	GWU-17 3-4	19 Jun 2020 11:00			23 Jun 2020 14:33	1
HS20061021-14	GWU-18 3-4	19 Jun 2020 11:40			23 Jun 2020 14:55	1
HS20061021-19	GWU-19 3-4	19 Jun 2020 12:25			23 Jun 2020 15:18	1
Batch ID: R363801 (0)	**Test Name :** GASOLINE RANGE ORGANICS BY SW8015C				**Matrix:** Soil	
HS20061021-04	GWU-16 3-4	19 Jun 2020 10:25			23 Jun 2020 20:06	1
HS20061021-09	GWU-17 3-4	19 Jun 2020 11:00			23 Jun 2020 22:15	1
HS20061021-14	GWU-18 3-4	19 Jun 2020 11:40			23 Jun 2020 22:31	1
HS20061021-19	GWU-19 3-4	19 Jun 2020 12:25			23 Jun 2020 22:47	1

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R364177 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20061021-01	GWU-16 0-1	19 Jun 2020 10:10			29 Jun 2020 14:17	1
HS20061021-02	GWU-16 1-2	19 Jun 2020 10:15			29 Jun 2020 14:17	1
HS20061021-03	GWU-16 2-3	19 Jun 2020 10:20			29 Jun 2020 14:17	1
HS20061021-04	GWU-16 3-4	19 Jun 2020 10:25			29 Jun 2020 14:17	1
HS20061021-05	GWU-16 4-5	19 Jun 2020 10:30			29 Jun 2020 14:17	1
HS20061021-06	GWU-17 0-1	19 Jun 2020 10:45			29 Jun 2020 14:17	1
HS20061021-07	GWU-17 1-2	19 Jun 2020 10:50			29 Jun 2020 14:17	1
HS20061021-08	GWU-17 2-3	19 Jun 2020 10:55			29 Jun 2020 14:17	1
Batch ID: R364180 (0)	**Test Name :** MOISTURE - ASTM D2216				**Matrix:** Soil	
HS20061021-09	GWU-17 3-4	19 Jun 2020 11:00			29 Jun 2020 14:53	1
HS20061021-10	GWU-17 4-5	19 Jun 2020 11:05			29 Jun 2020 14:53	1
HS20061021-11	GWU-18 0-1	19 Jun 2020 11:25			29 Jun 2020 14:53	1
HS20061021-12	GWU-18 1-2	19 Jun 2020 11:30			29 Jun 2020 14:53	1
HS20061021-13	GWU-18 2-3	19 Jun 2020 11:35			29 Jun 2020 14:53	1
HS20061021-14	GWU-18 3-4	19 Jun 2020 11:40			29 Jun 2020 14:53	1
HS20061021-15	GWU-18 4-5	19 Jun 2020 11:45			29 Jun 2020 14:53	1
HS20061021-16	GWU-19 0-1	19 Jun 2020 12:10			29 Jun 2020 14:53	1
HS20061021-17	GWU-19 1-2	19 Jun 2020 12:15			29 Jun 2020 14:53	1
HS20061021-18	GWU-19 2-3	19 Jun 2020 12:20			29 Jun 2020 14:53	1
HS20061021-19	GWU-19 3-4	19 Jun 2020 12:25			29 Jun 2020 14:53	1
HS20061021-20	GWU-19 4-5	19 Jun 2020 12:30			29 Jun 2020 14:53	1

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: 154739 (0) **Instrument: FID-7** **Method: TPH DRO/ORO BY SW8015C**

MBLK Sample ID: **MBLK-154739** Units: **mg/Kg** Analysis Date: **23-Jun-2020 11:54**
Client ID: Run ID: **FID-7_363774** SeqNo: **5631937** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	< 0.50	1.7								
TPH (Motor Oil Range)	< 0.50	3.4								
Surr: 2-Fluorobiphenyl	*2.414*	*0.10*	*3.33*	*0*	*72.5*	*70 - 130*				

MS Sample ID: **HS20060980-01MS** Units: **mg/Kg** Analysis Date: **23-Jun-2020 13:06**
Client ID: Run ID: **FID-7_363774** SeqNo: **5631939** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	64.02	1.7	33.24	31.7	97.2	70 - 130				
TPH (Motor Oil Range)	70.44	3.4	33.24	34.87	107	70 - 130				E
Surr: 2-Fluorobiphenyl	*2.591*	*0.10*	*3.321*	*0*	*78.0*	*60 - 129*				

MSD Sample ID: **HS20060980-01MSD** Units: **mg/Kg** Analysis Date: **23-Jun-2020 13:30**
Client ID: Run ID: **FID-7_363774** SeqNo: **5631940** PrepDate: **23-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	69.3	1.7	33.32	31.7	113	70 - 130	64.02	7.93	30	E
TPH (Motor Oil Range)	78.92	3.4	33.32	34.87	132	70 - 130	70.44	11.4	30	SE
Surr: 2-Fluorobiphenyl	*2.782*	*0.10*	*3.329*	*0*	*83.6*	*60 - 129*	*2.591*	*7.11*	*30*	

The following samples were analyzed in this batch: HS20061021-04 HS20061021-09 HS20061021-14 HS20061021-19

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: R363801 (0) **Instrument:** FID-14 **Method:** GASOLINE RANGE ORGANICS BY SW8015C

MBLK Sample ID: **MBLK-0623201** Units: **mg/Kg** Analysis Date: **23-Jun-2020 18:45**
Client ID: Run ID: **FID-14_363801** SeqNo: **5632638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	< 0.010	0.050								
Surr: 4-Bromofluorobenzene	*0.1116*	*0.0050*	*0.1*	*0*	*112*	*75 - 121*				

LCS Sample ID: **LCS-0623201** Units: **mg/Kg** Analysis Date: **23-Jun-2020 18:13**
Client ID: Run ID: **FID-14_363801** SeqNo: **5632636** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.121	0.050	1	0	112	72 - 121				
Surr: 4-Bromofluorobenzene	*0.1188*	*0.0050*	*0.1*	*0*	*119*	*75 - 121*				

LCSD Sample ID: **LCSD-0623201** Units: **mg/Kg** Analysis Date: **23-Jun-2020 18:29**
Client ID: Run ID: **FID-14_363801** SeqNo: **5632637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.097	0.050	1	0	110	72 - 121	1.121	2.2	30	
Surr: 4-Bromofluorobenzene	*0.09697*	*0.0050*	*0.1*	*0*	*97.0*	*75 - 121*	*0.1188*	*20.2*	*30*	

MS Sample ID: **HS20061021-04MS** Units: **mg/Kg** Analysis Date: **23-Jun-2020 20:22**
Client ID: **GWU-16 3-4** Run ID: **FID-14_363801** SeqNo: **5632644** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8853	0.048	0.96	0	92.2	70 - 130				
Surr: 4-Bromofluorobenzene	*0.111*	*0.0048*	*0.096*	*0*	*116*	*70 - 123*				

MSD Sample ID: **HS20061021-04MSD** Units: **mg/Kg** Analysis Date: **23-Jun-2020 20:38**
Client ID: **GWU-16 3-4** Run ID: **FID-14_363801** SeqNo: **5632645** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8397	0.048	0.97	0	86.6	70 - 130	0.8853	5.29	30	
Surr: 4-Bromofluorobenzene	*0.1009*	*0.0048*	*0.097*	*0*	*104*	*70 - 123*	*0.111*	*9.56*	*30*	

The following samples were analyzed in this batch: HS20061021-04 HS20061021-09 HS20061021-14 HS20061021-19

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: R363732 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKS2-062320** Units: **ug/Kg** Analysis Date: **23-Jun-2020 11:06**
Client ID: Run ID: **VOA8_363732** SeqNo: **5631005** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 0.50	5.0								
Ethylbenzene	< 0.70	5.0								
Toluene	< 0.60	5.0								
Xylenes, Total	< 1.0	5.0								
Surr: 1,2-Dichloroethane-d4	*44.81*	*0*	*50*	*0*	*89.6*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*48.36*	*0*	*50*	*0*	*96.7*	*80 - 120*				
Surr: Dibromofluoromethane	*47.97*	*0*	*50*	*0*	*95.9*	*80 - 119*				
Surr: Toluene-d8	*48.89*	*0*	*50*	*0*	*97.8*	*81 - 118*				

LCS Sample ID: **VLCSS2-062320** Units: **ug/Kg** Analysis Date: **23-Jun-2020 10:20**
Client ID: Run ID: **VOA8_363732** SeqNo: **5631004** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	52.45	5.0	50	0	105	75 - 124				
Ethylbenzene	52.68	5.0	50	0	105	70 - 123				
Toluene	51.33	5.0	50	0	103	76 - 122				
Xylenes, Total	158.5	5.0	150	0	106	77 - 128				
Surr: 1,2-Dichloroethane-d4	*49.35*	*0*	*50*	*0*	*98.7*	*76 - 125*				
Surr: 4-Bromofluorobenzene	*51.58*	*0*	*50*	*0*	*103*	*80 - 120*				
Surr: Dibromofluoromethane	*50.24*	*0*	*50*	*0*	*100*	*80 - 119*				
Surr: Toluene-d8	*49.09*	*0*	*50*	*0*	*98.2*	*81 - 118*				

MS Sample ID: **HS20061076-01MS** Units: **ug/Kg** Analysis Date: **23-Jun-2020 13:01**
Client ID: Run ID: **VOA8_363732** SeqNo: **5631582** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	55.45	4.9	49	0	113	70 - 130				
Ethylbenzene	55.19	4.9	49	0	113	70 - 130				
Toluene	55.24	4.9	49	0	113	70 - 130				
Xylenes, Total	162.5	4.9	147	0	111	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.77*	*0*	*49*	*0*	*97.5*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*47.8*	*0*	*49*	*0*	*97.6*	*70 - 130*				
Surr: Dibromofluoromethane	*49.06*	*0*	*49*	*0*	*100*	*70 - 130*				
Surr: Toluene-d8	*48.95*	*0*	*49*	*0*	*99.9*	*70 - 130*				

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: R363732 (0) **Instrument: VOA8** **Method: VOLATILES BY SW8260C**

MSD Sample ID: **HS20061076-01MSD** Units: **ug/Kg** Analysis Date: **23-Jun-2020 13:24**
Client ID: Run ID: **VOA8_363732** SeqNo: **5631583** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	53.25	4.8	48	0	111	70 - 130	55.45	4.04	30	
Ethylbenzene	52.58	4.8	48	0	110	70 - 130	55.19	4.85	30	
Toluene	53.07	4.8	48	0	111	70 - 130	55.24	4	30	
Xylenes, Total	156.3	4.8	144	0	109	70 - 130	162.5	3.9	30	
Surr: 1,2-Dichloroethane-d4	*44.64*	*0*	*48*	*0*	*93.0*	*70 - 126*	*47.77*	*6.77*	*30*	
Surr: 4-Bromofluorobenzene	*46.82*	*0*	*48*	*0*	*97.6*	*70 - 130*	*47.8*	*2.07*	*30*	
Surr: Dibromofluoromethane	*46.16*	*0*	*48*	*0*	*96.2*	*70 - 130*	*49.06*	*6.08*	*30*	
Surr: Toluene-d8	*46.75*	*0*	*48*	*0*	*97.4*	*70 - 130*	*48.95*	*4.59*	*30*	

The following samples were analyzed in this batch: HS20061021-04 HS20061021-09 HS20061021-14 HS20061021-19

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: 154883 (0) **Instrument: Gall01** **Method: CHLORIDE BY SW-846 9250**

MBLK Sample ID: **MBLK-154883** Units: **mg/Kg** Analysis Date: **27-Jun-2020 10:38**
Client ID: Run ID: **Gall01_364048** SeqNo: **5639329** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 2.74	10.0								

LCS Sample ID: **LCS-154883** Units: **mg/Kg** Analysis Date: **27-Jun-2020 10:39**
Client ID: Run ID: **Gall01_364048** SeqNo: **5639330** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	200.3	10.0	200	0	100	80 - 120				

MS Sample ID: **HS20060996-03MS** Units: **mg/Kg** Analysis Date: **27-Jun-2020 10:39**
Client ID: Run ID: **Gall01_364048** SeqNo: **5639334** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	249.3	9.89	197.8	54.31	98.6	80 - 120				

MSD Sample ID: **HS20060996-03MSD** Units: **mg/Kg** Analysis Date: **27-Jun-2020 10:39**
Client ID: Run ID: **Gall01_364048** SeqNo: **5639335** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	249.3	9.91	198.3	54.31	98.3	80 - 120	249.3	0.0251	30	

The following samples were analyzed in this batch: HS20061021-01 HS20061021-02 HS20061021-03 HS20061021-04 HS20061021-05

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: 154884 (0) **Instrument: Gall01** **Method: CHLORIDE BY SW-846 9250**

MBLK Sample ID: **MBLK-154884** Units: **mg/Kg** Analysis Date: **27-Jun-2020 11:57**
Client ID: Run ID: **Gall01_364050** SeqNo: **5639392** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	< 2.74	10.0								

LCS Sample ID: **LCS-154884** Units: **mg/Kg** Analysis Date: **27-Jun-2020 11:58**
Client ID: Run ID: **Gall01_364050** SeqNo: **5639393** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	201.6	10.0	200	0	101	80 - 120				

MS Sample ID: **HS20061021-08MS** Units: **mg/Kg** Analysis Date: **27-Jun-2020 11:58**
Client ID: **GWU-17 2-3** Run ID: **Gall01_364050** SeqNo: **5639397** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	471.4	9.83	196.5	247.1	114	80 - 120				

MSD Sample ID: **HS20061021-08MSD** Units: **mg/Kg** Analysis Date: **27-Jun-2020 11:58**
Client ID: **GWU-17 2-3** Run ID: **Gall01_364050** SeqNo: **5639398** PrepDate: **26-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	454.9	9.91	198.3	247.1	105	80 - 120	471.4	3.55	30	

The following samples were analyzed in this batch:

HS20061021-06	HS20061021-07	HS20061021-08	HS20061021-09
HS20061021-10	HS20061021-11	HS20061021-12	HS20061021-13
HS20061021-14	HS20061021-15	HS20061021-16	HS20061021-17
HS20061021-18	HS20061021-19	HS20061021-20	

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: R364177 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20061021-08DUP** Units: **wt%** Analysis Date: **29-Jun-2020 14:17**
Client ID: **GWU-17 2-3** Run ID: **Balance1_364177** SeqNo: **5643064** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	9.34	0.0100					9.46	1.28	20	

The following samples were analyzed in this batch:

HS20061021-01	HS20061021-02	HS20061021-03	HS20061021-04
HS20061021-05	HS20061021-06	HS20061021-07	HS20061021-08

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: HS20061021

QC BATCH REPORT

Batch ID: R364180 (0) **Instrument:** Balance1 **Method:** MOISTURE - ASTM D2216

DUP Sample ID: **HS20061203-01DUP** Units: **wt%** Analysis Date: **29-Jun-2020 14:53**
Client ID: Run ID: **Balance1_364180** SeqNo: **5643121** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	1.31	0.0100					1.74	28.2	20	R

The following samples were analyzed in this batch:

HS20061021-09	HS20061021-10	HS20061021-11	HS20061021-12
HS20061021-13	HS20061021-14	HS20061021-15	HS20061021-16
HS20061021-17	HS20061021-18	HS20061021-19	HS20061021-20

ALS Houston, US Date: 30-Jun-20

Client: AECOM
Project: 60596678 Vacuum Glorietta West Unit
WorkOrder: **HS20061021**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
Date	
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 30-Jun-20

Sample Receipt Checklist

Work Order ID: HS20061021 **Date/Time Received:** **20-Jun-2020 09:45**

Client Name: AECOM-Houston **Received by:** **Paresh M. Giga**

Completed By:	/S/ Nilesh D. Ranchod	21-Jun-2020 14:01	**Reviewed by:**	/S/ Dane J. Wacasey	26-Jun-2020 20:12
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Soil** Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☑	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	2 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	COC IDs:215911/215912
Samplers name present on COC?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	

Temperature(s)/Thermometer(s):	0.4°C UC/C	IR # 25
Cooler(s)/Kit(s):	44623	
Date/Time sample(s) sent to storage:	06/20/2020 15:00	

Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample Labels IDs differ: COC= GWU-18 3-4 Labels = GWU-19 3-4 , COC= GWU-18 4-5 Labels = GWU-19 4-5. Times match to COC. Logged per COC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

ALS

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 2

COC ID: 215912

HS20061021
AECOM
Vacuum Gloriietta West Unit

, WV

ALS Project Manager:

Customer Information		Project Information			Analyses
Purchase Order		Project Name	Vacuum Glorietta West Unit ~~GVU Battery~~	A	8260_S (8260 BTEX)
Work Order		Project Number		B	8015_GRO_S (8015 TPH-GRO)
Company Name	AECOM	Bill To Company	AECOM	C	8015M_S_LL (8015 TPH-DRO/ORO)
Send Report To	Wallace Gilmore	Invoice Attn	USAPImaging - A/P	D	CL_S_9250 AutoUV (SW9250 Chloride (UV))
Address	19219 Katy Freeway Suite 100	Address	PO Box 203970	E	MOIST_ASTM (D2216 Moisture %)
				F	
City/State/Zip	Houston, TX 77094	City/State/Zip	Austin TX 78720	G	
Phone	(281) -64-6-24	Phone	(512) 419-6825	H	
Fax	(713) 780-0838	Fax		I	
e-Mail Address	Wallace.Gilmore@aecom.com	e-Mail Address	USAPImaging@aecom.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	GWU-16 0-1	6/19/20	1010	Soil	None	1				X	X						
2	GWU-16 1-2	↓	1015	↓	↓	1				X	X						
3	GWU-16 2-3	↓	1020	↓	↓	1				X	X						
4	GWU-16 3-4	↓	1025	↓	↓	2	X	X	X	X	X						
5	GWU-16 4-5	↓	1030	↓	↓	1				X	X						
6	GWU-17 0-1	↓	1045	↓	↓	1				X	X						
7	GWU-17 1-2	↓	1050	↓	↓	1				X	X						
8	GWU-17 2-3	↓	1055	↓	↓	1				X	X						
9	GWU-17 3-4	↓	1100	↓	↓	2	X	X	X	X	X						
10	GWU-17 4-5	↓	1105	↓	↓	1				X	X						

Sampler(s) Please Print & Sign: James Lovely [signature]

Shipment Method: FedEx

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other ______

Results Due Date:

Relinquished by: [signature] Date: 6/19/20 Time: 1400 Received by: [signature]

Relinquished by: Date: Time: Received by (Laboratory): 6/20/2020. 09:45

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: AECOM CEMC Hobbs NM

Cooler ID	Cooler Temp.
44623	u/c
	0.4°
	±2°
	C/0.0°

QC Package: (Check One Box Below)
[X] Level II Std QC
[ ] Level III Std QC/Raw Date
[ ] Level IV SW846/CLP
[ ] Other ______
[ ] TRRP Checklist
[ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Everett, WA +1 425 356 2600
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Holland, MI +1 616 399 6070

Chain of Custody Form

Page 2 of 2

COC ID: 215911

HS20061021

, WV

AECOM

Vacuum Gloriietta West Unit

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	Vacuum Glorietta West Unit ~~GWU Battery~~
Work Order		Project Number	
Company Name	AECOM	Bill To Company	AECOM
Send Report To	Wallace Gilmore	Invoice Attn	USAPImaging - A/P
Address	19219 Katy Freeway Suite 100	Address	PO Box 203970
City/State/Zip	Houston, TX 77094	City/State/Zip	Austin TX 78720
Phone	(281) -64-6-24	Phone	(512) 419-6825
Fax	(713) 780-0838	Fax	
e-Mail Address	Wallace.Gilmore@aecom.com	e-Mail Address	USAPImaging@aecom.com

A	8260_S (8260 BTEX)
B	8015_GRO_S (8015 TPH-GRO)
C	8015M_S_LL (8015 TPH-DRO/ORO)
D	CL_S_9250 AutoUV (SW9250 Chloride (UV))
E	MOIST_ASTM (D2216 Moisture %)
F	
G	
H	
I	
J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	GWU-18 0-1	6/19/20	1125	So. I	None	1				X	X						
2	GWU-18 1-2		1130			1				X	X						
3	GWU-18 2-3		1135			1				X	X						
4	GWU-18 3-4		1140			2	X	X	X	X	X						
5	GWU-18 4-5		1145			1				X	X						
6	GWU-19 0-1		1210			1				X	X						
7	GWU-19 1-2		1215			1				X	X						
8	GWU-19 2-3		1220			1				X	X						
9	GWU-19 3-4		1225			2	X	X	X	X	X						
10	GWU-19 4-5		1230			1				X	X						

Sampler(s) Please Print & Sign: James Lovely

Shipment Method: Fed EX

Required Turnaround Time: (Check Box) [X] STD 10 Wk Days [ ] 5 Wk Days [ ] 2 Wk Days [ ] 24 Hour [ ] Other _____

Results Due Date:

Relinquished by:		Date: 6/19/20	Time: 1400	Received by:	
Relinquished by:		Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):	6/20/2020 09:45

Notes: AECOM CEMC Hobbs NM

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- [X] Level II Std QC
- [ ] Level III Std QC/Raw Data
- [ ] Level IV SW846/CLP
- [ ] Other _____
- [ ] TRRP Checklist
- [ ] TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44623

CUSTODY SEAL

Date: 6/19/20 Time: 1400
Name: James Lovely
Company: AECOM

Seal Broken By: PG
Date: 06/20/20

44623 JUN 2 0 2020

Must Deliver Next Business Day
Time and Tempature Sensitive!

ALS

44623

ORIGIN ID:SGRA (575) 391-8777
GUEST JAMES LOVELY
HOLIDAY INN EXPRESS C/O AECOM
4000 N LOVINGTON HWY

HOBBS, NM 88240
UNITED STATES US

SHIP DATE: 10JUN20
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: CEMC NM-B072265-DW

FedEx Express

E

FedEx
1891 8877 5175

SATURDAY 12:00P
PRIORITY OVERNIGHT

X0 SGRA

77099
TX-US IAH

#3911590 06/19 56BJ1/C7DD/FE4A

Appendix G

Statistical Calculation of Chloride Exposure Point Concentrations in Soil

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/10/2020 7:00:06 PM
From File	WorkSheet_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chloride

General Statistics

Total Number of Observations	26	Number of Distinct Observations	26
Number of Detects	21	Number of Non-Detects	5
Number of Distinct Detects	21	Number of Distinct Non-Detects	5
Minimum Detect	4.54	Minimum Non-Detect	0.529
Maximum Detect	12500	Maximum Non-Detect	2.92
Variance Detects	11164757	Percent Non-Detects	19.23%
Mean Detects	2469	SD Detects	3341
Median Detects	992	CV Detects	1.353
Skewness Detects	1.713	Kurtosis Detects	2.767
Mean of Logged Detects	6.225	SD of Logged Detects	2.529

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.756	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.908	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.27	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.188	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1994	KM Standard Error of Mean	620.5
KM SD	3088	95% KM (BCA) UCL	3008
95% KM (t) UCL	3054	95% KM (Percentile Bootstrap) UCL	3004
95% KM (z) UCL	3015	95% KM Bootstrap t UCL	3526
90% KM Chebyshev UCL	3856	95% KM Chebyshev UCL	4699
97.5% KM Chebyshev UCL	5870	99% KM Chebyshev UCL	8169

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.294	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.823	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.115	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.203	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.413	k star (bias corrected MLE)	0.385
Theta hat (MLE)	5983	Theta star (bias corrected MLE)	6406
nu hat (MLE)	17.33	nu star (bias corrected)	16.19
Mean (detects)	2469		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1994
Maximum	12500	Median	566.5
SD	3149	CV	1.579
k hat (MLE)	0.211	k star (bias corrected MLE)	0.212
Theta hat (MLE)	9445	Theta star (bias corrected MLE)	9388
nu hat (MLE)	10.98	nu star (bias corrected)	11.05
Adjusted Level of Significance (β)	0.0398		
Approximate Chi Square Value (11.05, α)	4.606	Adjusted Chi Square Value (11.05, β)	4.333
95% Gamma Approximate UCL (use when n>=50)	4783	95% Gamma Adjusted UCL (use when n<50)	5084

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1994	SD (KM)	3088
Variance (KM)	9534858	SE of Mean (KM)	620.5
k hat (KM)	0.417	k star (KM)	0.395
nu hat (KM)	21.69	nu star (KM)	20.52
theta hat (KM)	4781	theta star (KM)	5053
80% gamma percentile (KM)	3214	90% gamma percentile (KM)	5647
95% gamma percentile (KM)	8325	99% gamma percentile (KM)	15070

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (20.52, α)	11.24	Adjusted Chi Square Value (20.52, β)	10.78
95% Gamma Approximate KM-UCL (use when n>=50)	3642	95% Gamma Adjusted KM-UCL (use when n<50)	3796

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.89	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.908	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.169	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.188	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1995	Mean in Log Scale	5.194
SD in Original Scale	3149	SD in Log Scale	3.124
95% t UCL (assumes normality of ROS data)	3050	95% Percentile Bootstrap UCL	3099
95% BCA Bootstrap UCL	3331	95% Bootstrap t UCL	3648
95% H-UCL (Log ROS)	951898		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.905	KM Geo Mean	135
KM SD (logged)	3.498	95% Critical H Value (KM-Log)	6.562
KM Standard Error of Mean (logged)	0.703	95% H-UCL (KM -Log)	6029797
KM SD (logged)	3.498	95% Critical H Value (KM-Log)	6.562
KM Standard Error of Mean (logged)	0.703		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1995	Mean in Log Scale	5.03

SD in Original Scale	3149	SD in Log Scale	3.383
95% t UCL (Assumes normality)	3049	95% H-Stat UCL	3462596

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

na Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	3796

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Chloride>600

General Statistics

Total Number of Observations	16	Number of Distinct Observations	16
		Number of Missing Observations	0
Minimum	118	Mean	3230
Maximum	12500	Median	1510
SD	3506	Std. Error of Mean	876.6
Coefficient of Variation	1.086	Skewness	1.416

Normal GOF Test

Shapiro Wilk Test Statistic	0.821	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.887	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.242	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.213	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	4766	95% Adjusted-CLT UCL (Chen-1995)	5003
		95% Modified-t UCL (Johnson-1978)	4818

Gamma GOF Test

A-D Test Statistic	0.33	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.77	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.145	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.222	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.86	k star (bias corrected MLE)	0.74
Theta hat (MLE)	3757	Theta star (bias corrected MLE)	4364
nu hat (MLE)	27.51	nu star (bias corrected)	23.68
MLE Mean (bias corrected)	3230	MLE Sd (bias corrected)	3754
		Approximate Chi Square Value (0.05)	13.61
Adjusted Level of Significance	0.0335	Adjusted Chi Square Value	12.74

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	5621	95% Adjusted Gamma UCL (use when n<50)	6002

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.961	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.887	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.157	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.213	Data appear Lognormal at 5% Significance Level	

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	4.771	Mean of logged Data	7.396
Maximum of Logged Data	9.433	SD of logged Data	1.346

Assuming Lognormal Distribution

95% H-UCL	12558	90% Chebyshev (MVUE) UCL	7885
95% Chebyshev (MVUE) UCL	9796	97.5% Chebyshev (MVUE) UCL	12448
99% Chebyshev (MVUE) UCL	17659		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	4672	95% Jackknife UCL	4766
95% Standard Bootstrap UCL	4597	95% Bootstrap-t UCL	5243
95% Hall's Bootstrap UCL	5258	95% Percentile Bootstrap UCL	4631
95% BCA Bootstrap UCL	5035		
90% Chebyshev(Mean, Sd) UCL	5859	95% Chebyshev(Mean, Sd) UCL	7051
97.5% Chebyshev(Mean, Sd) UCL	8704	99% Chebyshev(Mean, Sd) UCL	11951

Suggested UCL to Use

95% Adjusted Gamma UCL	6002

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.