AP – 001

2015 AGWMR

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ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge
Louisiana 70827
Tel 225 292 1004
Fax 225 218 9677
www.arcadis-us.com

Mr. Glenn von Gonten
Environmental Bureau
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Subject:
2015 Annual Groundwater Report
Former Brickland Refinery Site
Sunland Park, New Mexico
Huntsman International LLC
Case No. AP-01

ENVIRONMENT

Date:
March 31, 2016

Contact:
Timothy D. Ratchford

Extension:
242

Email:
tim.ratchford@arcadis.com

Our ref:
LA003185.2015.00500
Huntsman/3185.2015/C/2/cao

Dear Mr. von Gonten:

On behalf of Huntsman International LLC (Huntsman), ARCADIS U.S., Inc., is submitting one copy of the above-referenced report. As agreed upon on February 11, 2003, this report is being submitted on or before April 1 for the previous year. An additional copy is being provided to the District 2 office in Artesia.

If you have any questions regarding the enclosed report, please contact the undersigned at (225) 292-1004 or Mr. Edward L. Gunderson with the Huntsman facility at (281) 719-3039.

Sincerely,

ARCADIS U.S., Inc.

Timothy D. Ratchford, P.G. (LA/TX)
Associate Vice President/Principal Scientist

Enclosure

Copies:
NMOCD District 2 – Artesia
Edward L. Gunderson – Huntsman

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2015 Annual Groundwater Monitoring Report

Former Brickland Refinery
Sunland Park, New Mexico

March 31, 2016

ARCADIS

2015 Annual Groundwater Monitoring Report

Former Brickland Refinery
Sunland Park, New Mexico

Timothy D. Ratchford, P.G. (LA/TX)
Associate Vice President/Principal Scientist

Prepared for:
Huntsman International LLC

Prepared by:
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge
Louisiana 70816
Tel 225 292 1004
Fax 225 218 9677

Our Ref.:
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Executive Summary

This 2015 Annual Groundwater Monitoring Report documents the results of three groundwater monitoring events conducted at the former Brickland Refinery site in Sunland Park, New Mexico. The 2015 semiannual groundwater monitoring events were conducted in June (June 8-10), September (September 14-16), and December (December 2-4). This report contains summaries of groundwater elevation and analytical data from the 2015 groundwater monitoring events as well as historical records.

This monitoring program was conducted in accordance with the Groundwater Monitoring Plan included as Section 3.5 of the Stage 2 Abatement Plan approved by Mr. Bill Olson of the New Mexico Oil Conservation Division (NMOCD) in a letter dated December 17, 1998, and revised in 2006. A request was sent to the NMOCD in a letter dated November 7, 2014, to modify the existing sampling performed at the site. Other activities proposed as part of the request included Conducting Soil Excavation at WP-14 and Plugging and Abandonment of Other Site Monitor Wells.

The request was approved by Mr. Glenn von Gonten in correspondence dated April 24, 2015, and the Addendum to Abatement Plan AP-001 for the Former Brickland Refinery was submitted to the NMOCD on June 3, 2015. The modification to the plan requires quarterly sampling for all remaining wells, starting with the June 2015 sampling event and continuing until 2017.

In accordance with the Stage 2 Abatement Plan, quarterly sampling events include water level and product thickness measurements in all monitor wells, as well as analysis of benzene for all sampled wells. In addition, each sampling event also includes analyses for polynuclear aromatic hydrocarbons (PAHs) only at Monitor Well MW-8.

During the 2015 monitoring events, the following samples were collected:

- Five off-site well samples (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S);
- Five on-site well samples (MW-5, MW-8, MW-10, MW-11, and MW-17);

The laboratory-reported benzene concentrations for samples collected from MW-5 and MW-8 during the June, September, and December 2015 events were above the New Mexico Water Quality Control Commission (NMWQCC) standard. The benzene

concentration for the sample collected from MW-10 during the June 2015 event was above the NMWQCC standard.

The laboratory-reported total PAHs were below the NMWQCC standard for all samples collected during the June, September, and December 2015 monitoring events.

The hydraulic gradient beneath the former Brickland Refinery varies slightly across the site in response to river stages. In June, September, and December 2015 the gradient was approximately 0.0008, 0.0006, and 0.0003 foot per foot, respectively. The groundwater flow direction is generally to the southeast, parallel to the river.

Light non-aqueous phase liquid (LNAPL) was not measured at any of the locations during September or December 2015. In June 2015, product was observed in MW-10. Three PIG® absorbent socks were installed in MW-10 in June 2015, and they remained there until the following quarter. Measurable thicknesses of LNAPL were not found in any other wells during the 2015 monitoring events.

Well plugging and abandonment were conducted on July 20, 2015, in accordance with the Addendum to Stage 2 Abatement Plan approved by Mr. von Gonten with the NMOCD on April 24, 2015, and submitted to NMOCD on June 3, 2015. Twenty-one monitor wells were plugged and abandoned. A Plugging and Abandonment Field Activities Report to document the program and provide State of New Mexico Plugging Records was submitted to the NMOCD on September 17, 2015.

Soil excavation was conducted at WP-14 on November 11, 2015. The total volume of material removed during the excavation included 50 to 60 cubic yards of soil. Soil was transported off site for disposal at an authorized facility. Following soil removal, the excavated area was backfilled using clean fill material borrowed from an on-site area. A summary report for the excavation was provided to NMOCD on February 8, 2016.

Based on the results of ongoing monitoring, the following actions are recommended:

- Continue LNAPL removal, if present, at MW-10 by bailing or pumping at quarterly intervals;
- Continue monitoring of benzene in MW-5, MW-8, and MW-10 to evaluate trends in groundwater concentrations;

- Continue monitoring of PAH in MW-8 to evaluate trends in groundwater concentrations; and

- Continue groundwater sampling at MW-3S, MW-3D, MW-6S, MW-6D, MW-9S, MW-11, and MW-17.

1. Introduction

1.1 Background

The former Brickland Refinery site is located in Sunland Park, New Mexico, and consists of approximately 33 acres situated along the west bank of the Rio Grande (Figure 1). Huntsman International LLC (Huntsman) currently owns the site. From 1933 to 1958, the site was operated by previous owners as a petroleum refinery, producing both gasoline and jet fuel. The site was closed and the plant dismantled by previous owners in 1958. Between 1964 and 1989, the site was leased by previous owners to various parties to service trucks, conduct automobile salvage operations, graze livestock, and store used bricks.

Petroleum hydrocarbons have been reported in soil and groundwater at the site since the sampling program was initiated in December 1993. The distribution of petroleum hydrocarbons was investigated and these investigations provided the basis for the December 1998 Stage 2 Abatement Plan. The Stage 2 Abatement Plan provides the methods for abating contamination of groundwater and soil in compliance with New Mexico Water Quality Control Commission (NMWQCC) regulations on prevention and abatement of water pollution (20 New Mexico Administrative Code 6.2, Subpart IV) and New Mexico Oil Conservation Division (NMOCD) requirements to protect public health and the environment with respect to wastes from the refinement of crude oil (Section 70-2-12.8 (22) New Mexico Statute Annotated 1978). Huntsman maintained a stand-alone light non-aqueous phase liquid (LNAPL) recovery system (at MW-10) on the site as part of the Stage 2 Abatement Plan. The system was installed in December 1998 and was shut down in June 2008 because no free-phase product was removed from MW-10 in 2006, 2007, or 2008. In accordance with the Stage 2 Abatement Plan, upon the completion of free-phase product removal, on-site Monitor Wells MW-5, MW-8, MW-10, MW-11, and MW-17 were added to the monitoring plan as of June 2010.

The site layout and monitor well and sampling locations are shown on Figure 2.

1.2 Scope of Services

ARCADIS U.S., Inc., performed semiannual groundwater monitoring at the site in June, September, and December 2015. Table 1 provides a summary of the water sampling methods, purging methods, and laboratory analyses that were performed during the quarterly sampling events. Quarterly gauging of MW-10 and WP-14 was

performed in February 2015. The monitoring program was conducted in accordance with the Groundwater Monitoring Plan and Stage 2 Abatement Plan, approved by Mr. Bill Olsen of the NMOCD in his letter dated December 23, 1998. The sampling protocol was modified in 2006 with the modifications implemented during the June 2006 monitoring event. The revised protocol is in general accordance with applicable NMOCD, New Mexico Environment Department, and U.S. Environmental Protection Agency (USEPA) regulations, procedures, and guidelines. A request to modify the existing sampling performed at the site was sent to the NMOCD in a letter dated November 7, 2014. The request was approved by Mr. Glenn von Gonten in correspondence dated April 24, 2015, and the Addendum to Abatement Plan AP-001 for the Former Brickland Refinery was submitted to the NMOCD on June 3, 2015. The modification approval is included in Appendix A. The modification to the plan requires quarterly sampling for all remaining wells, starting with the June 2015 sampling event and continuing until 2017.

Revisions to the sampling program at the site were initiated during the June 2015 sampling event and include the following items:

- Cease sampling of and plug and abandon Monitor Wells MW-4, MW-7, MW-14, and MW-15;
- Cease analysis for PAHs for all monitor wells except MW-8;
- Cease analysis for lead;
- Cease sampling of the Rio Grande;
- Perform analyses for benzene only for Monitor Wells MW-3S, MW-3D, MW-5, MW-6S, MW-6D, MW-8, MW-9S, MW-10, MW-11, and MW-17; and
- Remove remaining well points.

The following items were included in the quarterly monitoring as required by the Groundwater Monitoring Plan and Stage 2 Abatement Plan and approved by the NMOCD:

- Depth to groundwater measurements were recorded in five on-site monitor wells and five off-site monitor wells. Historical groundwater elevations for the monitor

wells are provided in Table 2, and groundwater elevation contour maps for the 2015 monitoring events are depicted on Figures 3, 4, and 5;

- Analytical testing for the samples included benzene and polynuclear aromatic hydrocarbons (PAHs) only for MW-8 (using USEPA Test Methods 8260C and 8270D, respectively) during the June, September, and December monitoring events. The analytical results for benzene and PAHs are shown in Tables 3 and 4, respectively;

- Ten monitor wells were monitored for the presence of LNAPL, and a summary of the LNAPL thicknesses is graphed on Figure 6 and also included in Table 5;

- 2015 groundwater sampling was conducted in each of the five required off-site monitor wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S) in June, September, and December. In addition, sampling was conducted at five on-site wells (MW-5, MW-8, MW-10, MW-11, and MW-17) in June, September, and December 2015; and

- Extraction system operations and maintenance reports were not prepared because the extraction system was shut down in June 2008 due to an absence of LNAPL in Recovery Well MW-10.

2. Groundwater Elevation, Hydraulic Gradient, and Flow Direction

The hydraulic gradient beneath the former Brickland Refinery varies slightly across the site. This variability is in part a response to river stage fluctuations. In June, September, and December 2015 the gradient was approximately 0.0008, 0.0006, and 0.0003 foot per foot, respectively. The groundwater flow direction is generally to the southeast, parallel to the river.

Historical groundwater elevations for the monitor wells are provided in Table 2. Water levels are not listed for the well points because the well points were specifically designed to detect LNAPL at a discrete depth and the screened intervals do not correlate with the monitor well screens. Groundwater elevation contour maps for the June, September, and December 2015 monitoring events are depicted on Figures 3, 4, and 5, respectively.

Groundwater levels in the monitor wells are influenced by the stage of the Rio Grande bordering the site. Due to observed seasonal fluctuations in the river, water

levels in the monitor wells may vary as much as 2 feet over the course of a year. Monitoring of groundwater elevation since June 2003 indicates a consistent pattern of higher water elevations in the wells and the river during summer sampling events and lower water elevations during the winter sampling events.

3. LNAPL Removal

3.1 LNAPL Product Thickness

The occurrence of LNAPL in each well point and in MW-10 was tested with an oil/water interface meter; the potential occurrence of LNAPL in other monitor wells was evaluated visually during gauging of water levels with an electronic water level meter. In June 2015, measureable product was observed in MW-10. Measureable thicknesses of LNAPL were not found in any other wells during the three 2015 monitoring events. Recent and historical measurements dating back to June 2003 are graphed on Figure 6 and listed in Table 5.

LNAPL thickness maps were not prepared for this report because no wells contained measurable amounts of LNAPL.

3.2 Removal and Disposal of LNAPL

Historically, approximately 235 gallons of LNAPL have been removed from MW-10 since December 1998, when the product recovery system was installed. LNAPL yields were no longer recovered in measurable amounts during 2006 and 2007, and the recovery system was shut down/disconnected in June 2008. Subsequently, no LNAPL was removed from MW-10 in 2008, 2009, 2010, or 2011. In 2012, manual LNAPL removal was initiated for MW-10 in response to a measurable thickness present in MW-10 as of December 2011.

During the February 2015 LNAPL gauging and removal event, an odor was observed in MW-10, but there was no sheen or product thickness present. A tar-like substance was observed in WP-14, but no measureable product was observed.

During the June 2015 sampling event, 0.42 foot of product was observed in MW-10. Three PIG® absorbent socks were installed in MW-10, and they remained there until the following quarter. During the September and December 2015 sampling events, no measureable amount of LNAPL was observed in MW-10.

4. Sample Collection and Laboratory Analytical Testing Procedures

4.1 Fluid Level Measurements and Decontamination

The interface probe was decontaminated prior to each use and between each well to prevent the introduction of external contamination or artifacts into a well. A wash and double-rinse decontamination procedure was used. The procedure consisted of washing the probe with Liquinox, a mild, non-phosphate detergent, then twice rinsing with water.

4.2 Calibration of the Multi-Probe Water Analyzer

The multi-probe analyzer was calibrated by Geotech prior to use at the site. Each calibration was carried out in accordance with the equipment manufacturer's procedures and recommendations.

4.3 Well Purging and Field Parameter Measurements

The monitor wells were purged using low-flow/low-stress techniques prior to sampling. Low-flow purging involves removing small volumes of groundwater at very low pumping rates until certain field parameters have stabilized. Field parameter measurements were recorded while each well was purged through the multi-probe flow cell. The groundwater temperature, pH, specific conductance, dissolved oxygen, oxidation reduction (redox) potential, and turbidity were documented on the Water Sampling Logs provided in Appendix B. Purging of each well was continued until three consecutive readings for three field parameters (dissolved oxygen, redox potential, and turbidity) stabilized within 10 percent of one another. When stabilization was achieved, well purging was discontinued and the well was sampled. The total volume of water purged prior to sample collection was recorded on the Water Sampling Logs for each well. The purged water was containerized for disposal.

Approximately 3 gallons of purge water were removed from each well. Field data collected during the purging of each well are provided in Appendix B. Groundwater odor, color, and other physically apparent characteristics were documented. Monitor well integrity was also documented (see the Daily Reports provided in Appendix B).

During the June 2015 event, four of the wells sampled were equipped with dedicated pumps (Micropurge Bladder Pumps). Wells not equipped with dedicated pumps

were purged with peristaltic pumps. The dedicated pump for Monitor Well MW-3S was not operational; therefore, purging and sampling were accomplished with a peristaltic pump. All tubing used with the peristaltic pump was dedicated and/or replaced at each well. The other wells are equipped with dedicated pumps; therefore, no decontamination was required. Approximately 30 gallons of water were purged from the sampled monitor wells during the June, September, and December 2015 monitoring events. The purged water collected during these monitoring events will be collected by Safety-Kleen for subsequent nonhazardous disposal at an approved facility.

4.4 Groundwater Sample Collection

Samples were collected for laboratory analysis in the order of volatility of the analytical parameters (benzene first and PAH second). All samples were labeled with the sampling location, date, time, and testing requirements on self-adhering labels provided by the laboratory.

4.4.1 Benzene

The groundwater samples were analyzed by USEPA Method 8260C for benzene. Sample containers for volatile organic compounds were three 40-milliliter (mL) unpreserved glass vials. Water was collected from the well via tubing directly into the glass vial until a convex meniscus formed above the lip of the bottle. Once capped, the vial was checked for air bubbles (headspace) by turning it upside down, tapping the cap of the inverted bottle, and visually inspecting the bottle contents. No bubbles were observed in the vials shipped to the laboratory.

4.4.2 Polynuclear Aromatic Hydrocarbons

Samples collected from Monitor Well MW-8 in the June, September, and December 2015 monitoring events were analyzed by USEPA Method 8270D for the presence of PAHs. Sample containers for PAHs were three 40-mL glass vials with no preservative. Water was collected from the well via tubing placed directly into the sample container until filled to the neck.

4.5 Field Quality Assurance/Quality Control (QA/QC)

The Field QA/QC program includes collection of field blanks, equipment blanks, and duplicate samples. The water samples collected during the monitoring events were

placed in ice-filled coolers immediately after collection and shipped to ALS Environmental in Houston, Texas, for analysis. In each event, chain-of-custody forms documenting sample identification numbers, the required analysis for each sample, collection times, and delivery times to the laboratories were completed for each set of samples. Copies of chain-of-custody forms are provided in Appendix C. Descriptions of the QA/QC samples and evaluation of QA/QC results for 2015 are presented below.

4.5.1 Field Blanks

Field blanks were used to determine potential absorption of volatile organics from the ambient air into the water samples. The blanks for volatile organics were collected by filling three 40-mL glass vials with distilled water at the time of sampling. Field blanks were analyzed for benzene and PAHs during the June, September, and December 2015 sampling events. None of the constituents were detected in the field blanks collected during the three sampling events.

4.5.2 Equipment Blanks

Equipment blanks were collected on non-dedicated or new sampling equipment. During the June, September, and December sampling events, equipment blanks were collected for the Teflon® dipper and the water level indicator. Immediately following decontamination, equipment blanks were collected by pouring distilled water over the equipment, then filling three 40-mL glass vials with the water from the equipment. The equipment blanks were analyzed for benzene and PAHs during the June, September, and December sampling events.

During the September 2015 sampling event, phenanthrene was detected in EB091615. This was the only constituent detected in any of the equipment blanks collected during the three sampling events. The isolated detection in the blank may be attributed to ambient conditions unrelated to the site.

4.5.3 Duplicate Samples

Two duplicate samples were collected during each of the three 2015 monitoring events. The duplicate samples collected during the June monitoring event were collected from Monitor Wells MW-6S and MW-8. The duplicate samples collected during the September and December monitoring events were collected from Monitor Wells MW-8 and MW-17.

The duplicate sample results from June at MW-6S had no significant variation with the original sample. The non-detect analytical result for benzene in the duplicate sample was consistent with the non-detect original result in MW-6S. The duplicate sample results for PAHs were within a 31 percent difference of the original MW-8 results. Acenaphthene was detected below the NMWQCC standard in the duplicate sample, while the original sample was reported as a non-detect. Acenaphthylene and naphthalene were reported as non-detects in the duplicate sample, but were reported as low detections in the original sample. Analytical results for all other PAHs in the duplicate sample were consistent with the original results in MW-8.

The duplicate sample results from September at MW-17 had no significant variation with the original sample. The non-detect analytical result for benzene in the duplicate sample was consistent with the non-detect original result in MW-17. The duplicate sample results for PAHs were within 14 percent difference of the original MW-8 results. Non-detect analytical results for all other PAHs in the duplicate sample were consistent with non-detect original results in MW-8.

The duplicate sample results from December at MW-17 had no significant variation with the original sample. The non-detect analytical result for benzene in the duplicate sample was consistent with the non-detect original result in MW-17. The duplicate sample results for PAHs were within 10 percent difference of the original MW-8 results. Non-detect analytical results for all other PAHs in the duplicate sample were consistent with non-detect original results in MW-8.

5. Groundwater Analytical Results

5.1 Benzene

According to the Stage 2 Abatement Plan, benzene concentrations are measured quarterly during the June, September, and December sampling events. Benzene was reported in concentrations above the NMWQCC standard of 10 micrograms per liter (µg/L) in samples collected from Wells MW-5 and MW-8 in June, September, and December 2015 and in MW-10 in June 2015. The benzene concentration detected at MW-5 in September 2015 decreased from the detection in June 2015, but it increased at that location in December 2015. The benzene concentration detected at MW-8 in December 2015 was less than concentrations reported in June and September 2015. Benzene was detected above the NMWQCC standard at MW-10 in June 2015 and was not detected in the subsequent sampling events in September and December 2015.

Laboratory results for benzene analyses are shown in Table 3 and copies of the laboratory reports are provided in Appendix C.

5.2 Polynuclear Aromatic Hydrocarbons

Samples collected from MW-8 were analyzed for PAHs in June, September, and December 2015. Concentrations were reported below the NMWQCC standard of 30 µg/L for total PAHs. Laboratory results for PAH analyses are shown in Table 4 and copies of the laboratory reports are provided in Appendix C.

6. Remediation Performance

6.1 Bioremediation Pilot Testing

Absorbent socks were used during 2011 and the first half of 2012 as a pilot test evaluating bioremediation by enhancing natural attenuation. The absorbent socks use a patented calcium peroxide (45-70 percent composition) and calcium hydroxide (10-20 percent composition) solid granular material to react with water to release oxygen slowly, which stimulates aerobic biodegradation of groundwater contaminants.

6.2 Product Recovery

During the June 2015 sampling event, 0.42 foot of product was observed in MW-10. As stated in Section 3.2, three PIG® absorbent socks were installed in MW-10, and they remained there until the following quarter. During the September and December 2015 sampling events, no measureable amount of LNAPL was observed in MW-10.

7. Other Site Activities

As approved by the NMOCD, monitor wells that are no longer used to collect groundwater quality data were plugged and abandoned. Additionally, soil excavation was conducted at the location of WP-14. Summaries of these activities are provided below.

7.1 Monitor Well Plugging and Abandonment

On July 20, 2015, Huntsman observed and provided field oversight for the plugging and abandonment of 21 monitor wells. A New Mexico-licensed well driller was retained

to conduct the plugging and abandonment. A summary report was provided to NMOCD on September 17, 2015 (Appendix D).

7.2 WP-14 Soil Excavation

The soil excavation program at WP-14 was initiated on November 11, 2015. The initial excavation activities were conducted at the former WP-14 location to determine if tar-like material observed during groundwater gauging events was pooling around the WP-14 location. During the excavation, a seam of tar was observed approximately 2.5 feet below land surface. As the excavation progressed, a corroded pipe was observed east of WP-14. It was assumed that the pipe may have served as a source for the tar material. The pipe was immediately removed during the excavation.

The excavation proceeded to remove all soil with tar staining. Soil was transported off site for disposal at an authorized facility. Following soil removal, the excavated area was backfilled using clean fill material borrowed from an on-site area. A summary report for the excavation was provided to NMOCD on February 8, 2016 (Appendix E).

8. Conclusions

Overall, the reported concentrations in groundwater appear to be stable or decreasing. During the 2015 reporting period, benzene concentrations from three wells (MW-5, MW-8, and MW-10) exceeded NMWQCC standards; PAHs were reported below NMWQCC standards. Review of laboratory results shows a general decrease in benzene concentrations in MW-5, MW-8, and MW-10. This decreasing trend will be verified with future sampling events.

The 2015 sampling events confirm that residual LNAPL is present at the site with the presence of product observed in June 2015.

9. Recommendations

Based upon the data collected during the 2015 sampling program, the following recommendations are proposed for the remediation system and monitoring operations at the former Brickland Refinery.

- Continue LNAPL removal, if present, at MW-10 by bailing or pumping at quarterly intervals;

- Continue monitoring of benzene in MW-5, MW-8, and MW-10 to evaluate trends in groundwater concentrations;
- Continue monitoring of PAH in MW-8 to evaluate trends in groundwater concentrations; and
- Continue groundwater sampling at MW-3S, MW-3D, MW-6S, MW-6D, MW-9S, MW-11, and MW-17.

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Table 1. Water Sampling and Purging Methods, 2015 Annual Groundwater Monitoring Report, Former Brickland Refinery, Sunland Park, New Mexico, Huntsman International LLC.

Well No.	Sample Date	Purge Method	Sampling Method	Purge Volume	Laboratory Analytes
MW-3S	6/10/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	9/14/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/2/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-3D	6/10/2015	Low-Flow Purge	Dedicated Bladder Pump	Approximately 3 gallons	Benzene
	9/14/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/2/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-5	6/9/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	9/15/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/3/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-6S	6/10/2015	Low-Flow Purge	Dedicated Bladder Pump	Approximately 3 gallons	Benzene
	9/15/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/3/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-6D	6/10/2015	Low-Flow Purge	Dedicated Bladder Pump	Approximately 3 gallons	Benzene
	9/15/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/3/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-8	6/9/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene, PAH
	9/16/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene, PAH
	12/4/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene, PAH
MW-9S	6/10/2015	Low-Flow Purge	Dedicated Bladder Pump	Approximately 3 gallons	Benzene
	9/15/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/3/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-10	6/8/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	9/16/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/4/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-11	6/9/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	9/14/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/2/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
MW-17	6/9/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	9/14/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
	12/2/2015	Low-Flow Purge	Peristaltic Pump	Approximately 3 gallons	Benzene
Total volume purged during semiannual monitoring event in June 2015:					30 gallons
Total volume purged during semiannual monitoring event in September 2015:					30 gallons
Total volume purged during semiannual monitoring event in December 2015:					30 gallons
Total volume purged during semiannual monitoring events:					90 gallons

Notes:
PAH = Polynuclear aromatic hydrocarbon.

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Table 2. Monitor Well Groundwater Elevations, 2015 Annual Groundwater Monitoring Report, Former Brickland Refinery, Sunland Park, New Mexico, Huntsman International LLC.

Well ID	TOC	6/18/2003	12/16/2003	6/16/2004	12/16/2004	6/15/2005	12/14/2006	6/13/2006	12/14/2006	6/13/2007	12/11/2007	6/25/2008	1/7/2009	6/30/2009	12/9/2009	6/21/2010	12/7/2010	6/28/2011	12/13/2011	6/19/2012	12/11/2012	6/11/2013	12/3/2013	6/9/2014	12/9/2014	6/8/2015	9/14/2015	12/2/2015
MW-1	3730.57	3725.55	3723.69	3725.56	3723.6	3726.5	3724.01	3725.89	3724.29	3726.74	3724.57	3726.88	3724.4	3726.94	3724.20	3726.79	3724.08	3726.27	3723.93	3725.83	3724.01	3725.80	3724.07	3726.26	3723.96	3726.46	Plugged 7/15	Plugged 7/15
MW-2	Plugged	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-3S	3730.00	3724.65	3722.69	3724.61	3722.71	3725.56	3723.1	3725.02	3723.34	3725.82	3723.49	3725.99	3723.53	3725.98	3723.24	3725.88	3723.15	3725.35	3723.05	3724.86	3723.03	3724.68	3723.08	3725.27	3722.84	3725.70	3725.16	3722.57
MW-3D	3730.00	3724.57	3722.61	3724.62	3722.64	3725.49	3723.04	3724.96	3723 29	3725.78	3723.57	3725.96	3723.5	3725.92	3723.68	3725.83	3723.07	3725.37	3722.93	3724.96	3722.91	3724.81	3723.28	3725.37	3722.74	3725.62	3725.27	3722.48
MW-4	3728.86	3724.87	3722.88	3724.76	3722.96	3725.75	3723.37	3725.21	3723.62	3726.06	3723.77	3726.26	3723.82	3726.22	3723.52	3726.41	3723.41	3725.51	3723.26	3725.11	3723.20	3724.73	3723.34	3725.35	3723.05	3725.72	Plugged 7/15	Plugged 7/15
MW-5	3729.70	3724.91	3722.85	3724.83	3722.98	3725.68	3723.38	3725.15	3723.65	3726.02	3723.84	3726.14	3723.85	3726.21	3723.51	3726.13	3723.54	3725.50*	3722.13*	3724.91*	3723.27	3724.66	3723.37	3725.22	3723.14	3725.60	3725.40	3722.79
MW-6S	3730.65	3724.4	3722.38	3724.4	3722.45	3725.21	3722.9	3724.76	3722.99	3725.53	3723.13	3725.7	3723.29	3725.68	3722.99	3725.70	3722.83	3725.11	3722.69	3724.70	3722.71	3724.50	3722.61	3725.07	3722.50	3725.32	3725.03	3722.35
MW-6D	3730.62	3724.36	3722.33	3724.38	3722.41	3725.22	3722.86	3724.74	3722.98	3725.58	3723.28	3725.76	3723.25	3725.69	3722.95	3725.62	3722.85	3725.06	3722.76	3724.67	3722.70	3724.54	3722.59	3725.19	3722.46	3725.39	3724.99	3722.26
MW-7	3728.96	3724.76	3722.69	3724.75	3722.82	3725.53	3723.24	3725.06	3723.45	3725.92	3723.78	3726.05	3723.64	3726.39	3723.42	3725.99	3723.26	3725.43	3723.04	3724.99	3723.08	3724.73	3723.06	3725.39	3722.93	3725.70	Plugged 7/15	Plugged 7/15
MW-8	3729.22	3724.67	3722.63	3724.62	3722.84	3725.28	3723.25	3724.91	3723.46	3725.53	3723.67	3725.79	3723.62	3725.78	3723.39	3725.53	3723.22	3725.25*	3721.89*	3724.76*	3723.05	3723.87	3723.04	3724.46	3722.89	3724.76	3725.24	3722.59
MW-9S	3730.01	3724.04	3722.02	3723.97	3722.18	3724.85	3722.65	3724.39	3722.89	3725.4	3723.17	3725.41	3723.17	3725.41	3722.88	3725.35	3723.23	3725.16	3722.32	3724.33	3722.49	3723.98	3722.38	3724.68	3722.32	3724.92	3724.74	3722.14
MW-9D	3730.08	Dry	Dry	Dry	Dry	Dry	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05
MW-10	3732.54	3725.67	3722.31	3724.41	3722.56	3725.24	3723.11	3724.53	3723.29	3725.83	3723.54	3732.54	3723.47	3725.82	3723.22	3725.73	3722.91	3724.87*	3722.21*	3724.34	3722.55	3724.56	3722.79	3724.88	3722.72	3725.01	3725.08	3722.36
MW-11	3731.40	3724.51	3721.17	3724.42	3722.74	3725.24	3723.21	3724.65	3723.43	3725.77	3723.62	3725.74	3723.53	3725.76	3723.30	3725.69	3723.17	3724.95	3722.94	3724.64	3722.98	3723.80	3722.95	3724.48	3722.78	3724.69	3725.08	3722.54
MW-12	3730.35	3725.93	3724.09	3725.9	3723.86	3726.74	3724.4	3726.24	3724.66	3727.1	3724.8	3726.95	3724.79	3727.28	3724.49	3727.08	3724.52	3726.70	3724.79	3726.21	3724.33	3726.00	3724.30	3726.54	3724.14	3726.73	Plugged 7/15	Plugged 7/15
MW-13	3732.36	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-14	3730.46	3725.3	3722.79	3724.81	3722.88	3725.67	3723.3	3725.17	3723.55	3726.03	3723.82	3726.13	3723.77	3726.14	3723.45	3726.06	3723.58	3725.49	3723.44	3725.09	3724.84	3724.70	3724.16	3725.31	3723.01	3725.66	Plugged 7/15	Plugged 7/15
MW-15	3738.62	3724.35	3722.38	3724.28	3722.58	3725.16	3723.04	3724.69	3723.42	3725.75	3723.57	3725.73	3723.58	3725.74	3723.26	3725.62	3723.26	3724.99	3723.15	3724.63	3722.81	3724.19	3722.74	3724.83	3722.60	3725.06	Plugged 7/15	Plugged 7/15
MW-16	3736.78	3724.17	3722.14	3724.13	3722.34	3725	3722.78	3724.48	3723.05	3725.53	3723.29	3725.51	3723.28	3725.51	3722.99	3725.43	3722.78	3724.87	3724.76	3724.64	3724.71	3724.12	(1)	3724.73	3722.70	3724.99	Plugged 7/15	Plugged 7/15
MW-17	3731.98	3724.67	3722.61	3724.67	3722.71	3725.53	3723.15	3725.06	3723.33	3725.93	3723.63	3726	3723.63	3726.02	3723.28	3726.02	3723.17	3725.40	3723.02	3724.95	3723.05	3724.80	3722.91	3725.44	3722.77	3725.69	3725.28	3722.56

Notes:
All units are feet mean sea level.
* = Oxygen-releasing compound sleeves/socks (O-Sox) were utilized at these wells to enhance natural attenuation. Water elevations may be artificially lowered due to displacement caused by the O-Sox.
(1) = Roots on probe.
Dry = Monitoring point was dry.
Plugged = Plugged and abandoned as of specified date.
TOC = Top of casing.

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Table 3. Benzene Concentrations in Monitor Wells, 2015 Annual Groundwater Monitoring Report, Former Brickland Refinery, Sunland Park, New Mexico, Huntsman International LLC.

Well	Date	Benzene (µg/L)
MW-3S	6/19/2003	ND
	12/17/2003	ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/24/2008	<1
	1/8/2009	<1
	7/1/2009	<1
	12/10/2009	<1
	6/23/2010	<0.20
	12/7/2010	<0.20
	6/29/2011	<1
	12/14/2011	<1
	6/19/2012	<0.20
	12/11/2012	<0.20
	6/12/2013	<1
	12/4/2013	<5
	6/9/2014	<0.60
	12/10/2014	<1
	6/10/2015	<1
	9/14/2015	<1
	12/2/2015	<1
MW-3D[a]	6/19/2003	ND
	12/17/2003	ND, ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/24/2008	<1
	1/8/2009	<1
	7/1/2009	<1
	12/10/2009	<1
	6/23/2010	<0.20
	12/7/2010	<1
	6/29/2011	<1
	12/14/2011	<1
	6/19/2012	<0.20
	12/11/2012	<0.20
	6/12/2013	<1
	12/4/2013	<5
	6/9/2014	<0.60
	12/10/2014	<1
	6/10/2015	<1
	9/14/2015	<1
	12/2/2015	<1
MW-5[a]	6/21/2010	**2,200**
	6/30/2011	**870**
	12/13/2011	**2,000**
	7/20/2012	**400**
	12/13/2012	**1100, 910**
	6/13/2013	**1,200**
	12/4/2013	**140**
	6/10/2014	**420**
	12/10/2014	**580**
	6/9/2015	**1,900**
	9/15/2015	**73**
	12/3/2015	**450**

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Table 3. Benzene Concentrations in Monitor Wells, 2015 Annual Groundwater Monitoring Report, Former Brickland Refinery, Sunland Park, New Mexico, Huntsman International LLC.

Well	Date	Benzene (µg/L)
MW-6S[a]	6/19/2003	ND
	12/17/2003	ND
	6/16/2004	ND, ND
	12/16/2004	ND, ND
	6/15/2005	0.8
	12/16/2005	ND
	6/15/2006	ND, ND
	12/14/2006	11, 6.1
	6/14/2007	ND, ND
	12/17/2007	ND, ND
	6/25/2008	<1
	1/8/2009	<1
	7/1/2009	1.7, 1.8
	12/11/2009	<10000, <10000
	6/24/2010	<1, <1
	12/8/2010	<0.20
	6/29/2011	0.61J, <1
	12/16/2011	<1, <1
	6/21/2012	<1, <1
	12/12/2012	<0.20
	6/12/2013	<1, <1
	12/4/2013	<10, <10
	6/10/2014	<0.60, <0.60
	12/9/2014	<1
	6/10/2015	<1, <1
	9/15/2015	<1
	12/3/2015	<1
MW-6D[a]	6/19/2003	ND
	12/17/2003	ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/25/2008	<1
	1/8/2009	<1
	7/1/2009	<1
	12/11/2009	<1
	6/24/2010	<0.20
	12/8/2010	<1
	6/29/2011	<1
	12/16/2011	<1
	6/21/2012	<0.20
	12/12/2012	<0.20
	6/12/2013	<1
	12/4/2013	<5
	6/10/2014	<0.60
	12/9/2014	<1, <1
	6/10/2015	<1
	9/15/2015	<1
	12/3/2015	<1
MW-8	6/22/2010	6,800
	6/30/2011	460
	12/14/2011	9,900
	7/20/2012	2,700
	12/13/2012	5,500
	6/13/2013	4,700
	12/4/2013	270
	6/10/2014	3,300
	12/10/2014	1,600
	6/9/2015	5,100
	9/16/2015	2,400
	12/4/2015	970

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Table 3. Benzene Concentrations in Monitor Wells, 2015 Annual Groundwater Monitoring Report, Former Brickland Refinery, Sunland Park, New Mexico, Huntsman International LLC.

Well	Date	Benzene (µg/L)
MW-9S	6/19/2003	ND, ND
	12/17/2003	ND
	6/16/2004	ND
	12/16/2004	ND
	6/15/2005	ND
	12/16/2005	ND
	6/15/2006	ND
	12/14/2006	ND
	6/14/2007	ND
	12/17/2007	ND
	6/24/2008	<1
	1/8/2009	<1
	7/2/2009	<1
	12/10/2009	<1
	6/23/2010	<0.20
	12/8/2010	<0.20
	6/29/2011	<1
	12/15/2011	<1
	6/21/2012	<0.20
	12/12/2012	<0.20
	6/12/2013	<1
	12/4/2013	<25
	6/9/2014	<0.60
	12/9/2014	<1
	6/10/2015	<1
	9/15/2015	<1
	12/3/2015	<1
MW-10	6/24/2010	<0.20
	6/30/2011	<1
	12/14/2011	**30**
	7/20/2012	**12**
	12/13/2012	**15**
	6/13/2013	2.8
	12/5/2013	<25
	6/11/2014	<0.60
	12/11/2014	<1
	6/8/2015	**23**
	9/16/2015	<1
	12/4/2015	<1
MW-11	6/22/2010	<0.20
	6/28/2011	4.7
	12/15/2011	--
	6/19/2012	--
	12/12/2012	--
	6/11/2013	<1
	12/3/2013	<25
	6/9/2014	<0.60
	12/11/2014	<1
	6/9/2015	1.3
	9/14/2015	<1
	12/2/2015	<1
MW-17[a]	6/22/2010	<0.20
	6/28/2011	<1
	12/15/2011	--
	6/19/2012	--
	12/12/2012	--
	6/11/2013	6.8
	12/4/2013	<25
	6/9/2014	<0.60
	12/10/2014	<1
	6/9/2015	<1
	9/14/2015	<1, <1
	12/2/2015	<1, <1
NMWQCC Standard (µg/L)		10

Notes:

All units are micrograms per liter (µg/L).

[a] = MW-3D, MW-5, MW-6S, MW-6D, and MW-17 and respective duplicate samples are reported in the same cell and separated by a comma.

-- = Sample not collected/analyzed for this constituent.

--[1] = Sample not collected/analyzed for this constituent in odd-numbered years.

BOLD = Concentrations in bold type indicate levels exceed NMWQCC standards.

J = The value is considered estimated by the laboratory as the analyte was detected below the laboratory's quantitation limit but above the laboratory's reporting limit.

ND = Not detected.

NMWQCC = New Mexico Water Quality Control Commission.

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Table 4. Total Polynuclear Aromatic Hydrocarbon Concentrations in Monitor Well MW-8, 2015 Annual Groundwater Monitoring Report, Former Brickland Refinery, Sunland Park, New Mexico, Huntsman International LLC.

Well ID	12/8/1993	3/25/1994	7/12/1994	9/28/1994	12/13/1994	3/28/1995	6/21/1995	9/1/1995	6/21/1996	6/26/1997	6/25/1998	6/3/1999	6/14/2000	7/27/2001	6/27/2002	6/19/2003	6/16/2004	6/15/2005	6/14/2006	6/14/2007	6/25/2008	7/2/2009	7/21/2010	6/28/2011	6/19/2012	6/11/2013	6/9/2014	6/9/2015	9/16/2015	12/4/2015
MW-8	--	250	93	366	236	180	--	140	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.21	<0.20	--	43.33	3.279	1.67, 0.86	9.723, 10.742	9.203, 8.707

June 2015 Data Detail					
Well	Acenaphthene	Acenaphthylene	Fluorene	Naphthalene	Phenanthrene
MW-8	<0.20, 0.23	0.24, <0.20	0.45, 0.33	0.62, <0.20	0.36, 0.30

September 2015 Data Detail					
Well	Acenaphthene	Acenaphthylene	Fluorene	Naphthalene	Phenanthrene
MW-8	0.463, 0.455	0.164, 0.189	0.684, 0.682	7.84, 8.85	0.572, 0.566

December 2015 Data Detail					
Well	Acenaphthene	Acenaphthylene	Fluorene	Naphthalene	Phenanthrene
MW-8	0.328, 0.316	0.228, 0.252	0.583, 0.597	7.65, 7.13	0.414, 0.412

Notes:
All units are micrograms per liter (µg/L).
Total PAH concentration is the sum of the low-level PAHs listed in the data detail section.
Duplicate result reported with MW-8 line, following the comma.
-- = Not sampled.
BOLD = Concentrations in bold type indicate levels exceed the New Mexico Water Quality Control Commission standard for PAH concentrations (30 µg/L).
PAH = Polynuclear aromatic hydrocarbon.

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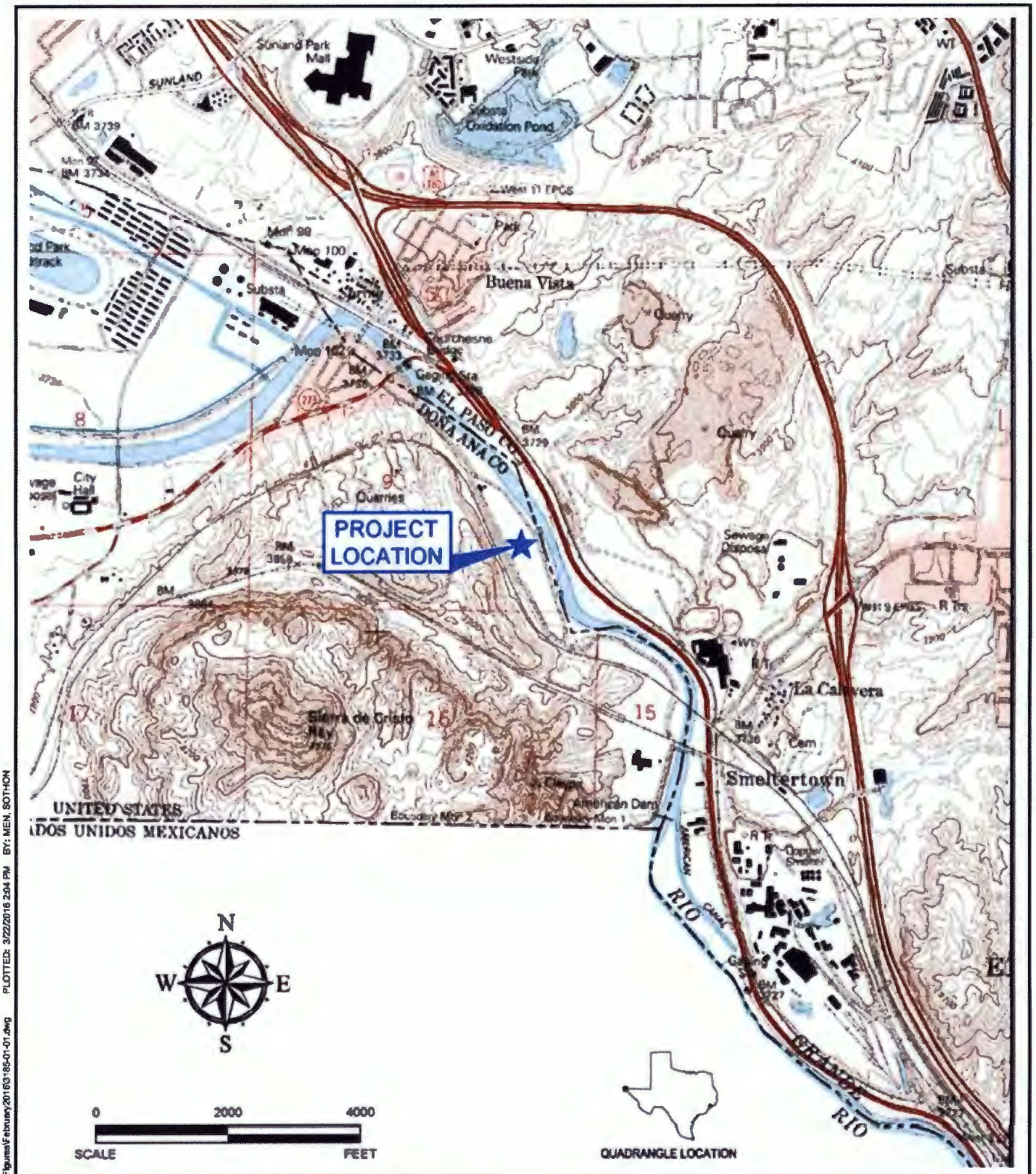
Table 5. LNAPL Thickness Measurements, 2015 Annual Groundwater Monitoring Report, Former Brickland Refinery, Sunland Park, New Mexico, Huntsman International LLC.

Well ID	Jun-03	Dec-03	Jun-04	Dec-04	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Jan-09	Jul-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Sep-15	Dec-15
MW-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
MW-2	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-3S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-3D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	0.00	0.00	0.00	0.00	0.00
MW-6S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-6D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-9S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-10	0.00	**0.13**	**0.08**	**0.05**	**0.10**	0.00	Trace	Trace	0.00	Trace	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.20**	**0.11**	**0.04**	**0.04**	Sheen	Sheen	0.00	**0.42**	0.00	0.00
MW-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-13	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
MW-14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NM[1]	0.00	0.00	0.00	0.00	0.00
MW-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WP-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A
WP-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Trace	0.00	0.00	Sheen	0.00	P&A	P&A	P&A
WP-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Dry	0.00	Dry	0.00	Dry	Dry	Dry	P&A	P&A	P&A
WP-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Trace	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A
WP-14	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Tar	Trace	0.00	0.00	0.00	0.00	0.00	**0.02**	0.00	Tar	Tar	**0.33**	Tar	0.00	Tar/Dry	P&A	P&A	P&A
WP-25	Dry	Dry	Dry	Dry	Dry	Dry	**0.70**	**0.52**	**0.54**	**0.52**	**0.45**	**0.08**	**0.07**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	0.00	P&A	P&A	P&A
WP-26S	**0.35**	**0.60**	**0.63**	**0.66**	**0.66**	**0.52**	**0.58**	**0.47**	**0.48**	**0.35**	**0.73**	**0.38**	**0.25**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A
WP-26D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A
WP-27S	**0.01**	0.00	0.00	0.00	0.00	0.00	Trace	**0.02**	0.00	Trace	0.00	**0.01**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	0.00	0.00	P&A	P&A	P&A
WP-27D	**0.12**	**0.26**	**0.06**	**0.11**	0.00	**0.04**	0.00	**0.04**	0.00	**0.03**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Sheen	Sheen	0.00	P&A	P&A	P&A
WP-30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P&A	P&A	P&A
WP-31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Dry	0.00	Dry	0.00	0.00	0.00	0.00	NM	NM	NM	NM	NM	0.00	NM[2]	NM[2]	NM[2]	P&A	P&A	P&A
WP-32	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Trace	Dry	Dry	NM	NM	NM	NM	NM	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	P&A	P&A	P&A
WP-33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Trace	0.00	0.00	Sheen	0.00	P&A	P&A	P&A

Notes:
[1] = Roots on probe.
[2] = Cap could not be removed.
BOLD = Measurable amount of LNAPL observed.
Dry = Monitoring point was dry.
LNAPL = Light Non-Aqueous Phase Liquid.
NM = Not measured.
P&A = Plugged and abandoned.
Sheen = Thin layer of LNAPL or oxidation observed; too thin to measure. See field notes for details.
Tar = Thickness measurement not obtainable because of presence of thick, tar-like substance in well point.
Trace = Traces of LNAPL observed; too thin to measure.



SOURCE: U.S.G.S. 7.5' QUADRANGLE, SMELTERTOWN, TX, 1994 (o31106G5)

FORMER BRICKLAND REFINERY
HUNTSMAN INTERNATIONAL LLC
SUNLAND PARK, NEW MEXICO

SITE LOCATION MAP

ARCADIS

FIGURE
1

DRAWN BY: S. MEN CHECKED BY: TDR PROJECT MANAGER: DRE
G:\AP\PROJECT\HUNTSMAN\LA003185.2015 Brickland\Figures\February2016\31185-01-01.dwg PLOTTED: 3/22/2016 2:04 PM BY: MEN, SOTHON

0 200' 400'

MW-9S

MW-6D

MW-6S

P&A P&A

P&A P&A

P&A P&A

P&A

MW-3D

MW-3S

MW-17

MW-10 P&A

P&A

P&A P&A

RIO GRANDE RIVER

P&A

P&A

MW-11

P&A

WP-9

P&A

MW-8

P&A

P&A

MW-5

P&A

P&A

NOTES:

1. ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

3. SOURCE: GCL FIGURE 2, FPRDCT2. DWG (9/13/95).

LEGEND

MW-3S	MONITOR WELL LOCATION AND DESIGNATION
	FENCE
	CULVERT
	WELL POINT
P&A	PLUGGED AND ABANDONED

FORMER BRICKLAND REFINERY
HUNTSMAN INTERNATIONAL LLC
SUNLAND PARK, NEW MEXICO

SITE LAYOUT

ARCADIS

FIGURE 2

DRAWN BY: S. MEN CHECKED BY: TDR PROJECT MANAGER: DRE
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0 200' 400'

MW-9S 3724.92

3725.0

MW-6D 3725.39

MW-6S 3725.32

3725.5

WP-27D

WP-27S

MW-15 3725.06

WP-2

WP-1

WP-3

WP-32

WP-25

MW-17 3725.69

MW-10 3725.01

MW-16 3724.99

WP-7

WP-31

MW-3D 3725.62

MW-3S 3725.70

RIO GRANDE RIVER

3726.0

WP-30

MW-7 3725.70

WP-33

MW-11 3724.69

WP-9

MW-14 3725.66

MW-8 3724.76

MW-4 3725.72

WP-14

3725.0

MW-1 3726.46

3726.5

MW-5 3725.60

3725.5

3726.0

3726.5

MW-12 3726.73

LEGEND

MW-3S 3725.70 — MONITOR WELL LOCATION AND DESIGNATION; WATER LEVEL ELEVATION (FT, MEAN SEA LEVEL)

3726.0 — POTENTIOMETRIC SURFACE CONTOUR (DASHED WHERE INFERRED)

DIRECTION OF GROUNDWATER FLOW

FENCE

CULVERT

WELL POINT

NOTES:

1. ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

2. VALUES IN PARENTHESES WERE ANOMALOUS AND NOT USED TO CONTOUR.

3. SOURCE: GCL FIGURE 2, FPRDCT2. DWG (9/13/95).

4. CONTOUR INTERVAL IS 0.5 FOOT.

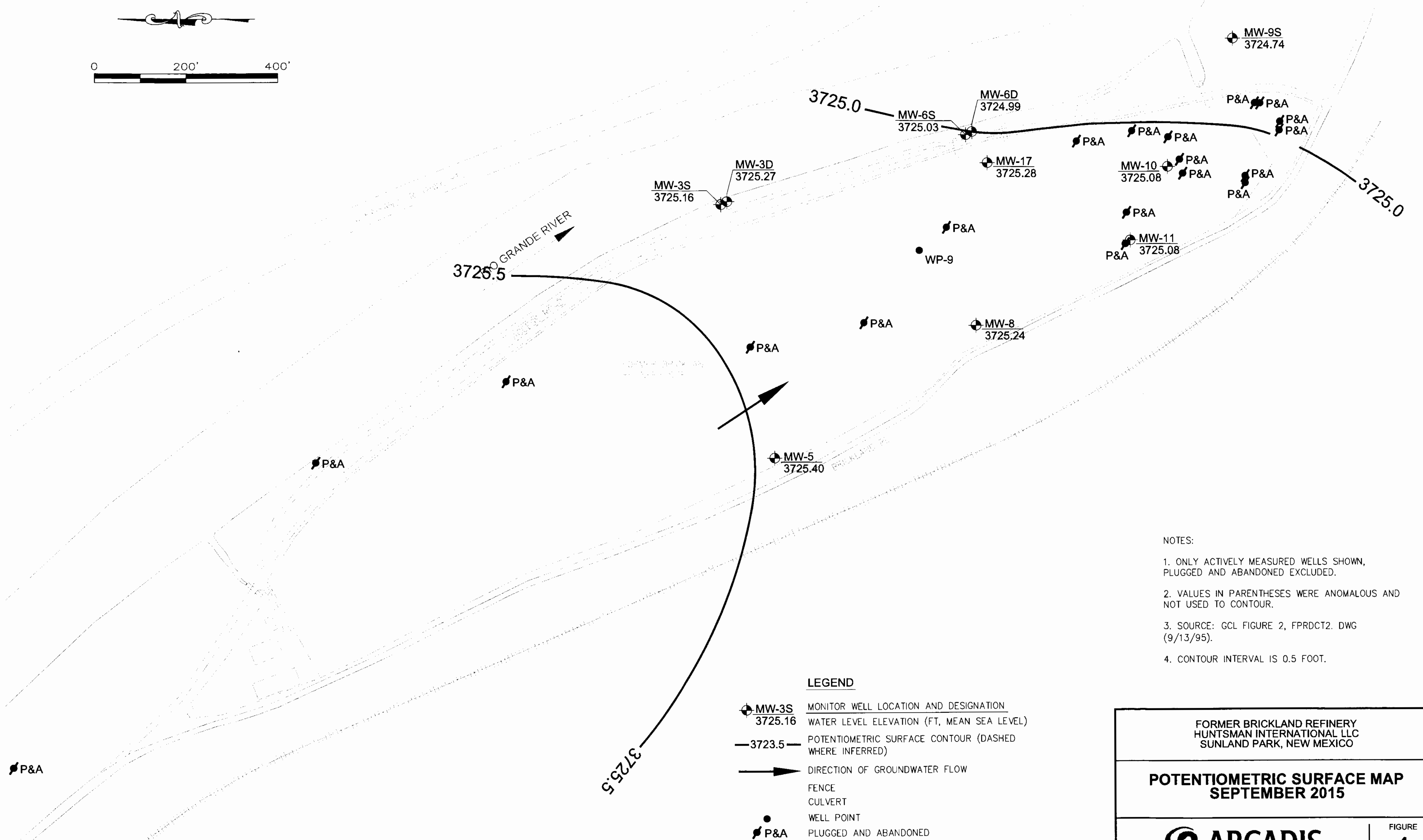
FORMER BRICKLAND REFINERY
HUNTSMAN INTERNATIONAL LLC
SUNLAND PARK, NEW MEXICO

POTENTIOMETRIC SURFACE MAP JUNE 2015

ARCADIS

FIGURE 3

DRAWN BY: S. MEN CHECKED BY: TDR PROJECT MANAGER: DRE
G:\APROJECT\HUNTSMAN\LA003185.2015 Brickland\Figures\February2016\3185-01-03.dwg PLOTTED: 3/22/2016 2:32 PM BY: MEN, SOTHON



NOTES:

1. ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

2. VALUES IN PARENTHESES WERE ANOMALOUS AND NOT USED TO CONTOUR.

3. SOURCE: GCL FIGURE 2, FPRDCT2. DWG (9/13/95).

4. CONTOUR INTERVAL IS 0.5 FOOT.

LEGEND

MW-3S	MONITOR WELL LOCATION AND DESIGNATION
3725.16	WATER LEVEL ELEVATION (FT, MEAN SEA LEVEL)
—3723.5—	POTENTIOMETRIC SURFACE CONTOUR (DASHED WHERE INFERRED)
→	DIRECTION OF GROUNDWATER FLOW
	FENCE
	CULVERT
●	WELL POINT
P&A	PLUGGED AND ABANDONED

FORMER BRICKLAND REFINERY
HUNTSMAN INTERNATIONAL LLC
SUNLAND PARK, NEW MEXICO

POTENTIOMETRIC SURFACE MAP
SEPTEMBER 2015

ARCADIS

FIGURE
4

DRAWN BY: S. MEN CHECKED BY: TDR PROJECT MANAGER: DRE
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0 200' 400'

MW-9S
3722.14

MW-6D
3722.26

MW-6S
3722.35

MW-3D
3722.48

MW-3S
3722.57

3722.5

MW-17
3722.56

MW-10
3722.36

MW-11
3722.54

WP-9

MW-8
3722.59

MW-5
3722.79

3722.5

RIO GRANDE RIVER

P&A

NOTES:

1. ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

2. VALUES IN PARENTHESES WERE ANOMALOUS AND NOT USED TO CONTOUR.

3. SOURCE: GCL FIGURE 2, FPRDCT2. DWG (9/13/95).

4. CONTOUR INTERVAL IS 0.5 FOOT.

LEGEND

- MW-3S 3722.57 — MONITOR WELL LOCATION AND DESIGNATION; WATER LEVEL ELEVATION (FT, MEAN SEA LEVEL)
- —3722.5— POTENTIOMETRIC SURFACE CONTOUR (DASHED WHERE INFERRED)
- DIRECTION OF GROUNDWATER FLOW
- FENCE
- CULVERT
- WELL POINT
- P&A PLUGGED AND ABANDONED

FORMER BRICKLAND REFINERY
HUNTSMAN INTERNATIONAL LLC
SUNLAND PARK, NEW MEXICO

POTENTIOMETRIC SURFACE MAP DECEMBER 2015

ARCADIS

FIGURE 5

DRAWN BY: S. MEN CHECKED BY: TDR PROJECT MANAGER: DRE
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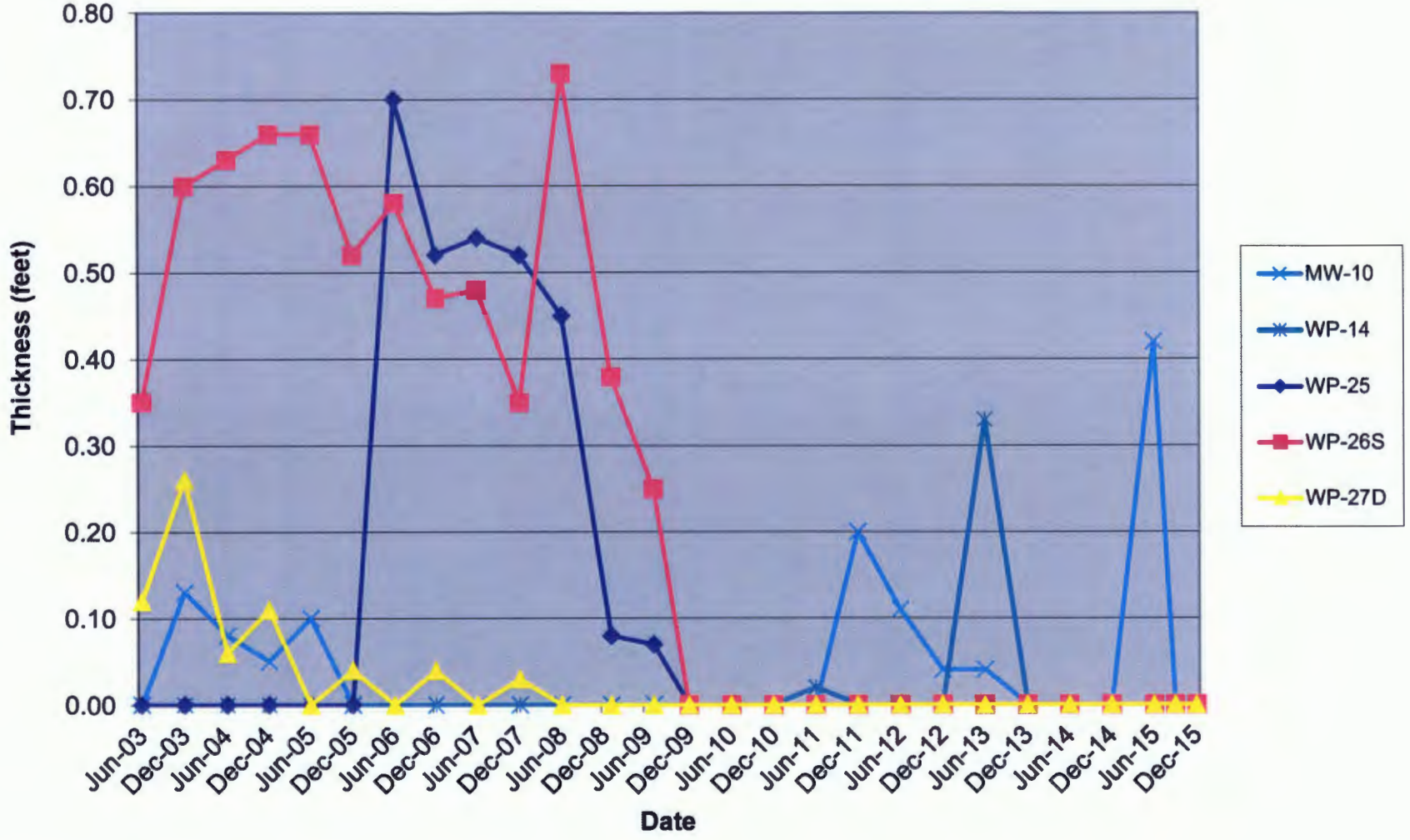
ARCADIS

Figure 6 - Historical LNAPL Thickness



ARCADIS

Appendix A

Modification Approval

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

APRIL 24, 2015

Mr. Ed Gunderson
Senior Manager, EHS Legal and Regulatory Compliance
Huntsman
8600 Gosling Road
The Woodlands, Texas 77381

RE: Request to Modify Sampling at the Former Brickland Refinery, Sunland Park, New Mexico (AP-001)

Mr. Gunderson:

The Oil Conservation Division (OCD) has reviewed Huntsman's request of November 19, 2014 to modify its sampling program under its abatement plan AP-001. OCD also reviewed Huntsman's 2014 Annual Ground Water Monitoring Report (AGWMR) dated March 27, 2015. Huntsman proposes several changes to its abatement plan. Huntsman proposes to reduce the number of monitor wells that it samples, reduce its analyte list, and to plug and abandon monitor wells and well points. OCD hereby conditionally approves Huntsman's request.

In its 2014 AGWMR Huntsman discusses the presence of "tar" at WP-14 and proposed to excavate soil to eliminate the "tar". This action was not proposed in its request of November 19, 2014. OCD approves the 2014 AGWMR proposal to dig out the "tar" at WP-14.

Huntsman should follow the monitor well plugging procedures required by the Office of the State Engineer. Huntsman should submit an interim report documenting the results of its plugging program and soil excavation activities.

Finally, OCD reminds Huntsman that it must demonstrate that it has achieved compliance with the Water Quality Control Commission ground water standards for eight consecutive quarters.

In all future reports, Huntsman should report all "non-detects" as "less than the detection limit" and specify the detection limit, rather than just "ND". Also, please make sure that all future reports have had "text recognition" performed on them before being submitted.

OCD's conditional approval of Huntsman's request does not relieve it of responsibility should future information indicate a threat to ground water, surface water, human health, or the environment. Furthermore, it does not relieve Huntsman of responsibility for compliance with any federal, state, or local laws and/or regulations.

Please contact me at (505) 476-3488 (Glenn.VonGonten@state.nm.us) if you have any questions.

Sincerely,

Glenn von Gonten
Senior Hydrologist

Cc: Jim Griswold

ARCADIS

Appendix B

Field Data

ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name: Huntsman - Soda Lake, NM			**Project Location:** Soda Lake, NM
Date: 2-18-15	**Time:** 905	**Conducted by:** D Solan	**Signature/Title:** D Solan Field Supervisor
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 Well monitoring
2 SITE observation
3 _____
4 _____
5 _____
6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☒ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ If deviations, notify PM & client
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ All equipment checked & OK?
		☒ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e., ladder, scaffold, trips) (L M H)	☐ Motion (i.e., traffic, moving water) (L M H)	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☐ Environment (i.e., heat, cold, ice) (L M H)
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e., ticks, poison ivy) (L M H) Spiders / Insects	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e., alone, night, not fit) (L M H)	☒ Driving (i.e., car, ATV, boat, dozer) (L M H) off Road

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss these methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

- [x] STOP WORK AUTHORITY (Must be addressed in every Tailgate meeting - *See statements below*)

[ ] Elimination	[ ] Substitution	[ ] Isolation
[ ] Engineering controls	[ ] Administrative controls	[x] Monitoring
[x] General PPE Usage	[ ] Hearing Conservation	[ ] Respiratory Protection
[ ] Personal Hygiene	[ ] Exposure Guidelines	[ ] Decon Procedures
[x] Emergency Action Plan (EAP)	[ ] Fall Protection	[ ] Work Zones/Site Control
[ ] JLA to be developed/used ***(specify)***	[ ] LPO conducted ***(specify job/JLA)***	[ ] Traffic Control
		[ ] Other ***(specify)***

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Doug Sloan / ARCADIS / [signature]	900		DS
Ana Gutierrez / Arcadis / [signature]	910		AG

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3758.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- [ ] Lessons learned and best practices learned today: _____
- [ ] Incidents that occurred today: _____
- [ ] Any Stop Work interventions today? _____
- [ ] Corrective/Preventive Actions needed for future work: _____
- [ ] Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

ARCADIS

DAILY LOG

Project / No. LA 00 3185.000 Page 1 of 1

Site Location Huntsman project - Sunland Park, NM Date 2-18-15

Subject Quarterly monitoring Prepared By D. Solon

Time	Description of Activities
905	arrived on site / H&S meeting
915	setup and observed MW-10. Gauged well - 9.95 DTW with no measurable product. Hydrocarbon odor observed - No pig was installed in well. Pig has been left out since June 2014 semi annual event and remains out.
940	setup on WP-14 - Gauged well - no measurable water indicated. Tar like substance on end of probe. Pig was removed and will remain out until observation in June 2015 -
955	Drove around site - observed fence line and property grounds - all is in good shape - no action required.
1005	Return to office.

ARCADIS

WELL GAUGING LOG

Site Name: Huntsman

Project Number: LA003185.000

Date & Time: 2/18/15 / ~~0900~~ 0915

Gauging Equations (before purging) LNAPL Only

water column height = (well depth in feet) - (initial depth to water in feet)

product layer thickness = (initial depth to water in feet) - (depth to product in feet)

Well Gauging Information

Well ID	Total Depth (feet bgs)	Depth to Product (feet bgs)	Depth to Water (feet bgs)	Water Column Height (feet bgs)	Product Layer Thickness (feet bgs)	Product Removed (gallons)	Comments
MW-10 ~~WP-14~~			9.95				Odor, no sheens installed since June of 2014
WP-14	No measurable water.						Remaining PIG, Tar like substance

Equipment and Decon Procedures

Gauging Equipment Probe

Decon Procedures

file stamp

ARCADIS

Document Control Number:TGM - _____
TGM + *project number plus date as follows: xxxxxxx.xxxx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance. at least daily.

Project Name: Huntsman		**Project Location:** Huntsman	
Date: 6-8-15	**Time:** 0853	**Conducted by:** Ana Gutierrez	**Signature/Title:** Staff / Geologist
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 Well gauging
2 PID reading
3 Well sampling
4
5
6

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☒ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Any Stop Work Interventions yesterday?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ If deviations, notify PM & client
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☒ All equipment checked & OK?
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ Staff knows gathering points?

Topics from Corp H&S to cover? ☐

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (**L**ow, **M**edium, **H**igh - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category

☐ Gravity (i.e. ladder, scaffold, trips) (L M H)	☒ Motion (i.e. traffic, moving water) (L M H) working close to River Bank	☐ Mechanical (i.e. augers, motors) (L M H)
☐ Electrical (i.e. utilities, lightning) (L M H)	☐ Pressure (i.e. gas cylinders, wells) (L M H)	☒ Environment (i.e., heat, cold, ice) (L M H) Hot weather
☒ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e. ticks, poison ivy) (L M H) spiders, insects, snakes	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e. alone, sight, not fit) (L M H)	☒ Driving (i.e. car, ATV, boat, dozer) (L M H) Off road

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes

- [x] **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - *(See statements below)*

[ ] Elimination	[ ] Substitution	[ ] Isolation
[ ] Engineering controls	[ ] Administrative controls	[x] Monitoring
[x] General PPE Usage	[ ] Hearing Conservation	[ ] Respiratory Protection
[ ] Personal Hygiene	[ ] Exposure Guidelines	[x] Decon Procedures
[x] Emergency Action Plan (EAP)	[ ] Fall Protection	[ ] Work Zones/Site Control
[ ] JLA to be developed/used ***(specify)***	[ ] LPO conducted ***(specify job/JLA)***	[ ] Traffic Control
[ ]	[ ]	[ ] Other ***(specify)***

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Ana Gutierrez / Arcadis /	AG 0857	AG 1540	AG
Isaac Curto / Arcadis /	IC 0857	IC 1540	IC

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

In the event of an injury, employees will call WorkCare at 1.800 455 5155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720 344.3844

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720 344 3844 and then Corp Legal at 1.720.344.3758.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- [ ] Lessons learned and best practices learned today: _____
- [ ] Incidents that occurred today: _____
- [ ] Any Stop Work interventions today? _____
- [ ] Corrective/Preventive Actions needed for future work: _____
- [ ] Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1 800.455.5155

ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance at least daily.

Project Name: Huntsman		**Project Location:** huntsman
Date: 06/09/15 **Time:** 0800	**Conducted by:** Ana Gutierrez	**Signature/Title:** AG / Geologist
Client:	**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 PID Reading
2 Well gauging
3 Well sampling
4
5
6

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☒ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ If deviations, notify PM & client
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ All equipment checked & OK?
		☒ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e. ladder, scaffold, trips) (L M H)	☒ Motion (i.e., traffic, moving water) (L M H) working close to river bank	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☒ Environment (i.e., heat, cold, ice) (L M H) Hot weamer
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e., ticks, poison ivy) (L M H) Spiders, insects, snakes	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☒ Driving (i.e. car, ATV, boat, dozer) (L M H) off road

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss these methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes

☒ **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - *(See statements below)*		
☐ Elimination	☐ Substitution	☐ Isolation
☐ Engineering controls	☐ Administrative controls	☒ Monitoring
☒ General PPE Usage	☐ Hearing Conservation	☐ Respiratory Protection
☐ Personal Hygiene	☐ Exposure Guidelines	☒ Decon Procedures
☒ Emergency Action Plan (EAP)	☐ Fall Protection	☐ Work Zones/Site Control
☐ JLA to be developed/used ***(specify)***	☐ LPO conducted ***(specify job/JLA)***	☐ Traffic Control
☐	☐	☐ Other ***(specify)***
☐	☐	☐

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Jay H / Arcadis / Ana Gutierrez	AG 0800	AG 1600	AG
Arcadis / Isaac Carto	IC 0800	IC 1600	IC

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

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Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

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Keep H&S 1st in all things | WorkCare - 1.800.455.6155

ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

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Project Name: Huntsman		**Project Location:** Huntsman	
Date: 06/01/15	**Time:** 0800	**Conducted by:** Ana Gutierrez	**Signature/Title:** [signature] / Geologist
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 Well gauging
2 PID Reading
3 Well Sampling
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Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

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[x] General PPE Usage	[ ] Hearing Conservation	[ ] Respiratory Protection
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Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Ana Gutierrez/Arcadis	AG 0800	AG 1500	AG
Isaac Castro / Arcadis	IC 0800	IC 1500	IC

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- [ ] Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

Huntsman Quarterly Sampling June 2015

6-8-15 I. Carter / A. Gutierrez

07:30 - Go over Sampling SOW
8:50 - Tailgate meeting
9:05 - Began gauging wells
10:50 - 11:05 - Talk to Client
11:05 - commence gauging
12:30 - 1300 - lunch
1300 - set up at MW-10
1340 - begin pumping 1420 sampling
1440 - sampled EB060815 (Decon)
1500 - sampled FB060815
1520 - packing cooler.
1540 - shipped cooler.

6-9-15 0730 - Pick up equipment
0800 - Drive to Site
0825 - 0845 set up MW-8
0845 - Begin pumping
0920 - sample MW-8 & Duplicate
0940 - Field Blank (FB 060915)
0950 - Equipment Blank (EB 060915)
- Decon
1005 - Set up MW-11
1020 - Start pumping
1055 - Sample MW-11 (Decon)
1130-1210 - lunch

6-9-15 12:35 - set up on MW-
12:40 - start pumping MW-5
1315 - Sample MW-5
- Decon
1340 - set up on MW-17
1350 - start pumping MW-17
1425 - Sample MW-17
- Decon
1445 - Take water to drums & close drums
1520 - packing cooler
1555 - shipped cooler

6-10-15
7:30 - Pick up equipment
7:55 - Drive to site
8:10 - 8:20 - set up on MW-35
8:20 - begin pumping
8:50 - Sample MW-35
- Decon
9:00 - 9:20 - set up MW-30
9:20 - start pumping
9:50 - Sample MW-30
- Decon

6-10-15.

10:00-10:12 Set up at MW-95

10:15 - start pumping

1045 - Sample MW-95

- Decon

11:30-12:00 - lunch

12:00-12:10 - Set up MW-65

12:15 - start pumping

1245 - Sample MW-65

1245 - ~~Decon~~ FD061015

- Decon

1255 1305 - Set up at MW-60.

1310 - start pumping

1340 - Sample MW-60

1355 - FB 061015 at 1355

1400 - EB 061015 at 1400

Cleaned up

1500 - package cooler, take down equipment

1530 - shipped cooler

END OF Sampling Event.

6-10-15 Huntsman Quarterly June 2015

10:00-10:12 Set up at MW-95

10:15 - start pumping

1045 - Sample MW-95

- Decon

11:30-12:00 - lunch

12:00-12:10 - Set up MW-65

12:15 - start pumping

1245 - Sample MW-65

1245 - ~~Decon~~ FD06101S

- Decon

1255 1305 - Set up at MW-60.

1310 - start pumping

1340 - Sample MW-60

1355 - EB 06101S at 1355

1400 - EB 06101S at 1400

Cleaned up

1500 - package cooler, take down equipment

1530 - shipped cooler

END OF Sampling Event.

Huntsman Quarterly June 20

6-12-15

8:15 - Bill Copeland & Doug Sato on site to Bail MW-10. Bailed 2 gals - no sheen observed. Installed 3 absorbent socks into MW-10. - will maintain until next quarter.

8:30 - Returned to office

DS

ARCADIS
Infrastructure · Water · Environment · Buildings

WELL GAUGING LOG

Site Name: Huntsman

Project Number: LA003185.000

Date & Time:

water column height = (well depth in feet) - (initial depth to water in feet) reading from Top of Casing

Well Gauging Information

Well ID	Date/Time 060815	PID (ppm)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness	Comments
MW-1	1150	0.0				
MW-2						Plugged
MW-3S	1202	0.0		4.30		
MW-3D	1201	0.0		4.38		
MW-4	10.42	0.0		3.14		
MW-5	10.38	330.6		4.10		
MW-6S	1214	0.6		5.33		
MW-6D	1212	0.0		5.23		
MW-7	1117	0.0		3.26		
MW-8	10.28	9.4		4.46		
MW-9S	1225	0.0		5.09		
MW-9D						Plugged
MW-10	1000	117.3	7.11	7.53		
MW-11	1022	0.0		6.71		
MW-12	1140	8.0	~~3.40~~	3.02		
MW-13						Plugged
MW-14	10.47	23.2		4.80		
MW-15	0911	1.7	~~13.55~~	13.56		
MW-16	0933	0.0		11.99		
MW-17	1105	1.3		6.29		
WP-1	0949	188.7		~~DRY~~ 8.37		TD: 11.62, odor oxidation on probe
WP-2	1005	6.0		6.21		
WP-3	1113	3.7		10.73		
WP-7	0938	0.0		10.43		
WP-14	1124	0.0		5.04		
WP-25	0944	15.0		dry		Odor, TD: 10.53
WP-26S	0953	2.4		8.25		Oxidation on probe
WP-26D	0954	73.9		7.85		Oxidation on probe
WP-27S	0920	1168.0		13.35		Oxidation, strong odor
WP-27D	0950	11.2		12.85		a lot of oxidation
WP-30	1014	0.0		11.80		
WP-31						Can't open
WP-32	0946	2.0		dry		TD: 11.49
WP-33	1019	90.2		9.06		

Equipment and Decon Procedures

Gauging Equipment water level meter, PID

Decon Procedures water, liquidnox

file stamp

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 060815

Project No	LA003185.000	Sample Personnel	AG, IC		
Site Name	Huntsman	Sample ID	MW-10		
Site Location	Huntsman	Duplicate ID	FB060815		
Site/Well No.	MW-10	Start pump	1342	Stop pump	1430
Weather		Start sampling	1420	Stop sampling	1430

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	7.13 / 8.63	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Perisaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1350		7.26	8,951	24.19	1.39		6.18	-222.9	7.84	Sheen on water
1355		7.26	8,984	24.08	1.43	5.11	~~8.09~~	-220.1	8.09	yellow tint,
1400		7.25	8,976	24.00	1.45	5.60	~~7.26~~	-224.9	8.32	Strong Odor.
1405		7.25	8,973	24.19	1.39	4.45	5.60	-232.1	8.39	
1410		7.25	8,978	23.83	1.43		5.27	-235.1	8.49	
1415		7.25	8,947	24.07	1.34		5.24	-226.4	8.61	
1420		7.22	8,956	23.86	1.20		4.66	-226.3	8.63	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging. use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: Equipment Blank (EB060815) at 1440
Field Blank (FB060815) at 1500

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65	0.5" = 38.61	
0.375" = 21.72	0.75" = 86.87	

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1" = 0.04	1.5" = 0.09	2" = 0.16	2.5" = 0.26	3" = 0.37	3.5" = 0.50
4" = 0.65	5" = 1.04	6" = 1.46			

ARCADIS

WATER SAMPLING LOG

Page 1 of _____

Date 06.09.15

Project No	LA003185.000	Sample Personnel	AG, IC
Site Name	Huntsman	Sample ID	MW-8
Site Location	Huntsman	Duplicate ID	FD060915
Site/Well No.	MW-8	Start pump	0845 Stop pump 0935
Weather		Start sampling	0920 Stop sampling 0935

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	4.36 / 6.93	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Perisaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other ORP	Appearance (Clarity, Color, Odor)
0850		7.15	8,670	22.70	1.03		3.71	-166.3	5.16	yellow tint,
0855		7.14	8,536	22.80	0.89		3.36	-195.1	5.67	solids on #20
0900		7.15	8,488	22.85	0.91		3.17	-196.9	5.95	strong odor
0905		7.15	8,424	22.95	0.89		3.69	-210.4	6.32	
0910		7.16	8,397	23.12	0.85		3.42	-206.6	6.63	
0915		7.16	8,365	23.32	0.85		3.99	-206.6	6.79	
0920		7.18	8,344	23.72	0.78		3.64	-202.1	6.93	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
Bottle - 1L Amber	2x 1 Liter	2	None
Amber Bottle	1L	2	↓
Amber Bottle	1L	2	↓
Amber Bottle	1L	2	↓
VOA - Benzene	40ml	3	↓

Remarks: Field Dup. (FD060915) at 0920
Field Blank (FB060915 at 0940 Equipment Blank (EB060915) at 0950

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

WATER SAMPLING LOG

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Date 060915

Project No LA003185.000
Site Name Huntsman
Site Location Huntsman
Site/Well No. MW-11
Weather

Sample Personnel AG, IC
Sample ID MW-11
Duplicate ID
Start pump 1020
Stop pump 1105
Start sampling 1055
Stop sampling 1105

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing
MP Elevation (ft)
Depth to Water before/after (ft) 6.95/9.36
Casing Diameter (in) 4"
Water Column in Well [1] (ft)
Evacuation Vol./Rate 300 mg/L
Volume per foot in Well [2]
Pump Intake Depth (ft)
Total Volume in Well [3]
Evacuation Method

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] °C/°F	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1025		7.48	7,650	23.65	1.18	3.22	-85.6	7.48	Hydrocarbon odor
1030		7.45	7,605	23.65	0.92	2.71	-92.4	7.95	Yellow tint.
1035		7.46	7,581	23.91	0.56	2.37	-83.2	8.23	Sheen on
1040		7.48	7,540	24.13	0.46	2.57	-98.1	8.56	probe
1045		7.49	7,523	23.98	0.39	2.94	-121.8	8.85	
1050		7.48	7,497	24.21	0.38	2.48	-127.2	9.09	
1055		7.45	7,517	24.00	0.38	2.80	-138.0	9.36	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks:

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.56

ARCADIS

WATER SAMPLING LOG

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Date 060915

Project No	LA003185.000	Sample Personnel	AG, JC		
Site Name	Huntsman	Sample ID	MW-5		
Site Location	Huntsman	Duplicate ID			
Site/Well No.	MW-5	Start pump	1240	Stop pump	1320
Weather		Start sampling	1315	Stop sampling	1320

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft) ____

Depth to Water before/after (ft)	4.61 / 6.17	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1245		6.51	19,824	23.87	0.81	10.1	+228.1	4.78	Dark color, black
1250		6.48	19,780	24.18	0.40	12.3	+233.4	5.15	Solids on
1255		6.43	19,727	24.06	0.34	12.2	+220.4	5.36	water.
1300		6.40	19,594	24.59	0.32	13.60	+253.4	5.50	very strong
1305		6.37	19,563	24.52	0.27	12.3	+299.3	5.92	hydrocarbon odor
1310		6.37	19,495	24.75	0.25	20.3	+346.4	5.93	and standing
1315		6.35	19,477	24.83	0.19	25.1	+429.1	6.17	water odor.
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: ____

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.56

ARCADIS

WATER SAMPLING LOG

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Date 060915

Project No	LA003185.000	Sample Personnel	AG, JC
Site Name	Huntsman	Sample ID	MW-17
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-17	Start pump	1347
Weather		Start sampling	1425
		Stop pump	1425
		Stop sampling	1430

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft) —

Depth to Water before/after (ft)	6.32 / 6.41	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other ORP	Appearance (Clarity, Color, Odor)
1355		7.24	12,329	23.29	0.50	3.67	-193.0	6.39	Some solids on water.
1400		7.20	12,321	23.11	0.33	2.95	-192.2	6.40	
1405		7.20	12,298	23.09	0.27	2.91	-193.7	6.41	
1410		7.20	12,296	23.16	0.27	2.95	-193.4	6.40	
1415		7.22	12,323	23.13	0.23	2.40	-192.8	6.41	
1420		7.21	12,338	23.30	0.23	2.90	-186.1	6.41	
1425		7.21	12,421	23.23	0.24	3.83	-184.4	6.41	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA- Benzene	40ml	3	None

Remarks:

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.56

ARCADIS

WATER SAMPLING LOG

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Date 060105

Project No	LA003185.000	Sample Personnel	AG, IC
Site Name	Huntsman	Sample ID	MW-3S
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-3S	Start pump	0817
Weather		Start sampling	0850
		Stop pump	0900
		Stop sampling	0900

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft)

Depth to Water before/after (ft)	4.49 / 5.24	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0820		7.37	6,441	20.10	1.59		5.48	-126.7	4.85	Organics on
0825		7.22	6,424	20.35	1.02		6.18	-122.1	4.98	water
0830		7.24	6,414	20.43	0.60		4.45	-113.8	5.10	
0835		7.26	6,394	20.38	0.38		4.15	-117.3	5.15	
0840		7.28	6,364	20.35	0.33		3.17	-117.8	5.20	
0845		7.32	6,355	20.39	0.30		3.11	-118.0	5.22	
0850		7.33	6,347	20.45	0.28		3.04	-118.9	5.24	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging. use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: Dedicated Pump doesn't work

TUBING DIAMETER VOLUMES. (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.56

ARCADIS

WATER SAMPLING LOG

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Date 060105

Project No	LA003185.000	Sample Personnel	AEG, IC
Site Name	Huntsman	Sample ID	MW-3D
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-3D	Start pump	0900 — Stop pump 1000
Weather		Start sampling	0950 — Stop sampling 1000

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft)

Depth to Water before/after (ft)	4.41 / 4.42	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Dedicated Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0920		7.16	17,804	20.65	0.41	3.63	-85.3	4.43	
0925		7.16	17,516	20.64	0.28	3.45	-74.1	4.43	
0930		7.16	17,760	20.43	0.27	2.99	-79.8	4.43	
0935		7.17	17,815	20.54	0.28	2.96	-81.8	4.43	
0940		7.18	17,794	20.65	0.31	2.58	-82.1	4.43	
0945		7.18	17,770	20.70	0.35	2.57	-82.2	4.42	
0950		7.18	17,720	20.81	0.45	2.09	-79.0	4.42	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: Discharge time 5, Fill Time 6.

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

WATER SAMPLING LOG

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Date 060105

Project No	LA003185.000	Sample Personnel	AG, IC
Site Name	Huntsman	Sample ID	MW-9S
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-9S	Start pump	1012 — Stop pump 1055
Weather		Start sampling	1045 — Stop sampling 1055

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft) _____

Depth to Water before/after (ft)	5.06/5.08	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Dedicated Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1015		7.26	17,702	21.92	1.99		3.03	-115.3	5.10	yellow tint water.
1020		7.25	17,723	21.31	0.74		3.08	-124.8	5.09	
1025		7.24	17,700	21.42	0.65		3.55	-126.6	5.08	Slight hydrocarbon odor.
1030		7.25	17,705	21.40	0.45		3.38	-124.5	5.09	
1035		7.27	17,681	21.47	0.45		4.40	-123.8	5.08	
1040		7.27	17,646	21.50	0.50		3.58	-121.4	5.08	
1045		7.27	17,630	21.60	0.56		4.49	-110.3	5.08	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: _____

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.60

ARCADIS

WATER SAMPLING LOG

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Date 060105

Project No	LA003185.000	Sample Personnel	AG, IC
Site Name	Huntsman	Sample ID	MW-6S
Site Location	Huntsman	Duplicate ID	FD060105
Site/Well No.	MW-6S	Start pump	1210 — Stop pump 1255
Weather		Start sampling	1245 — Stop sampling 1255

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft) _____

Depth to Water before/after (ft)	5.29 16.63	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Dedicated Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1215		7.17	17,877	23.81	4.41		6.31	-101.8	5.69	yellow tint H2O
1220		7.09	18,039	21.73	0.63		5.33	-135.5	5.78	hydrocarbon
1225		7.10	18,048	21.70	0.26		5.38	-150.5	5.87	odor.
1230		7.12	18,023	21.75	0.20		6.08	-155.5	5.98	
1235		7.14	17,998	22.00	0.18		6.25	-160.2	5.98	
1240		7.13	18,070	22.39	0.17		6.10	-165.4	6.48	
1245		7.14	18,451	22.70	0.15		6.07	-162.4	6.63	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging. use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Field Dup. [redacted] FD060105 at 1245

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65 — 0.5" = 38.61
0.375" = 21.72 — 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 — 2" = 0.16 — 3" = 0.37 — 4" = 0.65 — 6" = 1.46
1.5" = 0.09 — 2.5" = 0.26 — 3.5" = 0.50 — 5" = 1.04 — 8" = 2.56

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 060105

Project No	LA003185.000	Sample Personnel	AG, IC
Site Name	Huntsman	Sample ID	MW-6D
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-6D	Start pump	1305 — Stop pump 1355
Weather		Start sampling	1340 — Stop sampling 1355

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft) _____

Depth to Water before/after (ft)	5.12 / 5.09	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Dedicated Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C °F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1310		7.36	21,477	23.69	2.91		8.93	-53.6	5.11	
1315		7.31	21,212	22.80	0.88		7.07	-69.4	5.12	
1320		7.31	21,082	22.15	0.67		6.44	-66.9	5.12	
1325		7.28	21,075	22.19	0.52		6.14	-70.3	5.11	
1330		7.26	21,035	22.36	0.52		4.79	-64.2	5.10	
1335		7.27	21,040	22.48	0.43		5.22	-52.3	5.10	
1340		7.28	20,902	22.48	0.34		5.72	-65.9	5.09	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None
VOA - Benzene	40 ml	3	None

Remarks: Field Blank FB060105 at 1355
Equipment Blank EB060105 at 1400

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.56

ARCADIS

Document Control Number:TGM - _____
TGM + *project number plus date as follows: xxxxxxx.xxxx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance at least daily.

Project Name: Huntsman			**Project Location:** Huntsman
Date: 6-8-15	**Time:** 0853	**Conducted by:** Ana Gutierrez	**Signature/Title:** Staff / Geologist
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 Well gauging
2 PID Reading
3 Well sampling
4
5
6

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☒ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ If deviations, notify PM & client
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ All equipment checked & OK?
		☒ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category

☐ Gravity (i.e. ladder, scaffold, trips) (L M H)	☒ Motion (i.e. traffic, moving water) (L M H) Working close to River Bank	☐ Mechanical (i.e. augers, motors) (L M H)
☐ Electrical (i.e. utilities, lightning) (L M H)	☐ Pressure (i.e. gas cylinders, wells) (L M H)	☒ Environment (i.e., heat, cold, ice) (L M H) Hot Weather
☒ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e. ticks, poison ivy) (L M H) Spiders, Insects, Snakes	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☒ Driving (i.e. car, ATV, boat, dozer) (L M H) Off road

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

☒ **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - *(See statements below)*		
☐ Elimination	☐ Substitution	☐ Isolation
☐ Engineering controls	☐ Administrative controls	☒ Monitoring
☒ General PPE Usage	☐ Hearing Conservation	☐ Respiratory Protection
☐ Personal Hygiene	☐ Exposure Guidelines	☒ Decon Procedures
☒ Emergency Action Plan (EAP)	☐ Fall Protection	☐ Work Zones/Site Control
☐ JLA to be developed/used ***(specify)***	☐ LPO conducted ***(specify job/JLA)***	☐ Traffic Control
		☐ Other ***(specify)***

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Ana Gutierrez / Arcadis /	AG 0857	AG 1540	AG
Isaac Curto / Arcadis /	IC 0857	IC 1540	IC

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- ☐ Lessons learned and best practices learned today: _____
- ☐ Incidents that occurred today: _____
- ☐ Any Stop Work interventions today? _____
- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

ARCADIS

Document Control Number:TGM - _____
TGM + *project number plus date as follows: xxxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance at least daily.

Project Name: Huntsman		**Project Location:** Huntsman
Date: 06/09/15 **Time:** 0800	**Conducted by:** Ana Gutierrez	**Signature/Title:** AGA / Geologist
Client:	**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 PID Reading
2 Well gauging
3 Well sampling
4
5
6

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☒ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ If deviations, notify PM & client
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ All equipment checked & OK?
		☒ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (**L**ow, **M**edium, **H**igh - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e. ladder, scaffold, trips) (L M H)	☒ Motion (i.e. traffic, moving water) (L M H) working close to river bank	☐ Mechanical (i.e. augers, motors) (L M H)
☐ Electrical (i.e. utilities, lightning) (L M H)	☐ Pressure (i.e. gas cylinders, wells) (L M H)	☒ Environment (i.e. heat, cold, ice) (L M H) Hot weather
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e. ticks, poison ivy) (L M H) Spiders, insects, snakes	☐ Radiation (i.e. alpha, sun, laser) (L M H)
☐ Sound (i.e. machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☒ Driving (i.e. car, ATV, boat, dozer) (L M H) off road

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss these methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

- [X] STOP WORK AUTHORITY (Must be addressed in every Tailgate meeting - *(See statements below)*

[ ] Elimination	[ ] Substitution	[ ] Isolation
[ ] Engineering controls	[ ] Administrative controls	[X] Monitoring
[X] General PPE Usage	[ ] Hearing Conservation	[ ] Respiratory Protection
[ ] Personal Hygiene	[ ] Exposure Guidelines	[X] Decon Procedures
[X] Emergency Action Plan (EAP)	[ ] Fall Protection	[ ] Work Zones/Site Control
[ ] JLA to be developed/used ***(specify)***	[ ] LPO conducted ***(specify job/JLA)***	[ ] Traffic Control
[ ]	[ ]	[ ] Other ***(specify)***
[ ]	[ ]	[ ]

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Jaufh / Arcadis / Ana Gutierrez	AG 0800	AG 1600	AG
/ Arcadis / Isaac Cartro	IC 0800	IC 1600	IC

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

In the event of an injury, employees will call WorkCare at 1.800.455.5155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3758.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

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- [ ] Lessons learned and best practices learned today: _____
- [ ] Incidents that occurred today: _____
- [ ] Any Stop Work interventions today? _____
- [ ] Corrective/Preventive Actions needed for future work: _____
- [ ] Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.5155

ARCADIS

Document Control Number:TGM - _____
TGM + *project number plus date as follows: xxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance at least daily.

Project Name: Huntsman		**Project Location:** Huntsman	
Date: 06/01/15	**Time:** 0800	**Conducted by:** Ana Gutierrez	**Signature/Title:** Geologist
Client:		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 well gauging
2 PID Reading
3 well sampling
4
5
6

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☒ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
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☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ All equipment checked & OK?
		☒ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

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☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☒ Environment (i.e., heat, cold, ice) (L M H) Hot weather
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e., ticks, poison ivy) (L M H) spiders, insects, snakes	☐ Radiation (i.e., alpha, sun, laser) (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e., alone, night, not fit) (L M H)	☒ Driving (i.e., car, ATV, boat, dozer) (L M H) off road

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

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[ ] Elimination	[ ] Substitution	[ ] Isolation
[ ] Engineering controls	[ ] Administrative controls	[x] Monitoring
[x] General PPE Usage	[ ] Hearing Conservation	[ ] Respiratory Protection
[ ] Personal Hygiene	[ ] Exposure Guidelines	[x] Decon Procedures
[x] Emergency Action Plan (EAP)	[ ] Fall Protection	[ ] Work Zones/Site Control
[ ] JLA to be developed/used ***(specify)***	[ ] LPO conducted ***(specify job/JLA)***	[ ] Traffic Control
		[ ] Other ***(specify)***

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Ana Gutierrez/Arcadis	AG 0800	AG 1500	AG
Isaac Castro / Arcadis	IC 0800	IC 1500	IC

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

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In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3758.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

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- [ ] Lessons learned and best practices learned today: _____
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- [ ] Any Stop Work interventions today? _____
- [ ] Corrective/Preventive Actions needed for future work: _____
- [ ] Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

ALS Environmental

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Chain of Custody Form

Page 1 of 1

COC ID: 128175

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	Brickland Refinery Huntsman	A 8260 Benzene (unpreserved)
Work Order		Project Number		B 8270 - PAH
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS U.S., Inc.	C
Send Report To	Garett Ferguson	Invoice Attn		D
Address	211 N Florence Street, Suite 202	Address	211 N Florence Street, Suite 202	E
				F
City/State/Zip	El Paso, TX 79901	City/State/Zip	El Paso, TX 79901	G
Phone	(915) 533-3902	Phone	(915) 533-9025	H
Fax		Fax	(915) 533-8045	I
E-mail Address	Garett.Ferguson@arcadis-us.com	e-Mail Address		J

No.	Sample Description	Date	Time	Matrix	Preservative	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-10	060815	1420	W	None	3	X										
2	EB060815	060815	1440	W		3	X										
3	TB060815	060815	1500	W		3	X										
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Standard TAT (7 to 10 business days) | Rush TAT (Please Specify Below) | Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Ana Gutierrez	060815	1520		
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Relinquished by:	Date:	Time:	Received by (Laboratory):	

Preservation Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035

Cooler ID | Cooler Temp

QC Package: (Check One Box Below)
- [X] Level 2 Std QC
- [ ] Level 3 Std QC/Raw da
- [ ] Level 4 SW846/CLP
- [ ] Other/EDD _____
- [ ] TRRP Chklist
- [ ] TRRP Level 4

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.

ALS Environmental

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Chain of Custody Form

Page 1 of 1

COC ID: 128174

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Brickland Refinery Huntsman	A	8260 Benzene (unpreserved)
Work Order		Project Number		B	8270 - PAH
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS U.S., Inc.	C	
Send Report to	Garett Ferguson	Invoice Attn		D	
Address	211 N Florence Street, Suite 202	Address	211 N Florence Street, Suite 202	E	
				F	
City/State/Zip	El Paso, TX 79901	City/State/Zip	El Paso, TX 79901	G	
Phone	(915) 533-3902	Phone	(915) 533-9025	H	
Fax		Fax	(915) 533-9045	I	
e-Mail Address	Garett.Ferguson@arcadis-us.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Preservative	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW 8	0609 15	0920	W	None	5	X	X									
2	FDCC0615					2		X									
3	FBCC0615		0950			2		X									
4	TPCC0615		0940			2		X									
5	MW-11		1055			3	X										
6	MW-5		1315			3	X										
7	MW 17		1425			3	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: Fedex

Required Turnaround Time: (Check One Box) ☒ Std 10 W. days ☐ 5 Wk Days ☐ 3 Wk Days ☐ 2 Days ☐ 1 Day ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Ana Gutierrez	06/15	1530		
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID: / Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)
☒ Level 2 Std QC ☐ TRRP Chklist
☐ Level 3 Std QC/Raw da ☐ TRRP Level 4
☐ Level 4 SW846/CLP
☐ Other/EDD

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:
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3. The Chain of Custody is a legal document. All information must be completed accurately.

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Fort Collins, CO +1 970 490 1511
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Middletown, PA +1 717 944 5541
Spring City, PA +1 610 948 4903
Salt Lake City, UT +1 801 266 7700
South Charleston, WV 304 356 3168
PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 115755

ALS Environmental

ALS Project Manager: AG

ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	~~AT002100.2013.MOB02~~ AG	Project Name	~~Ft Bliss Landfill~~ Huntsman AG	~~Landfill Metals~~ AG 8260 Benzene (unpres.)
Work Order		Project Number	~~AT002100.2013.MOB02~~ AG	~~Moisture %~~ AG 8270 - PAH
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	~~SPLP Contingency~~ AG
Send Report To	Garrett Ferguson	Invoice Attn	Accounts Payable	
Address	401 East Main Street, Suite 400	Address	630 Plaza Drive, Suite 600	
City/State/Zip	El Paso, TX 79901	City/State/Zip	Highlands Ranch	
Phone	(915) 533-3902	Phone	(303) 471-3699	
Fax		Fax		
e-mail Address	Garett.Ferguson@arcadis-us.com	e-mail Address		

	Sample Description	Date	Time	Matrix	Container	# Containers	Hold
1	MW-3S	060105	0850	W	None	3	X
2	MW-3D	060105	0950	W	None	3	X
3	MW-9S	060105	1045	W	None	3	X
4	MW-6S	060105	1245	W	None	3	X
5	FD060105	060105	—	W	None	3	X
6	MW-6D	060105	1340	W	None	3	X
7	FB060105	060105	1355	W	None	3	X
8	EB060105	060105	1400	W	None	3	X
9							
10							

Sampler(s) Please Print & Sign: Trent Gutierrez

Shipment Method: FedEx

Requested Turnaround Time: (Check Box) ☒ Other AG ☐ 5 Work Days ☐ 2 Work Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Trent Gutierrez	6/10/15	1500		7 Day TAT Results; 10 Day TAT Final
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID / Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)

- ☒ Level 2 Std QC
- ☐ Level 3 Std QC/Raw da
- ☐ Level 4 SW846/CLP
- ☐ Other/EDD

AG

- ☒ TRRP ChkList
- ☐ TRRP Level 4

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.

ARCADIS

Document Control Number:TGM - _____

TGM + *project number plus date as follows: xxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance at least daily.

Project Name: Huntsman			Project Location: Sunland Park, NM
Date: 9-14-15	Time: 0825	Conducted by: S. Solon	Signature/Title: S Solon Field Supervisor
Client:		Client Contact:	Subcontractor companies:

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 Gauge all WELLS
2 Sample wells
3 _____
4 _____
5 _____
6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ If deviations, notify PM & client
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☐ All equipment checked & OK?
		☒ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and Assess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e. ladder, scaffold, trips) (L M H)	☐ Motion (i.e. traffic, moving water) (L M H)	☐ Mechanical (i.e. augers, motors) (L M H)
☐ Electrical (i.e. utilities, lightning) (L M H)	☐ Pressure (i.e. gas cylinders, wells) (L M H)	☒ Environment (i.e. heat cold, ca) (L M H) Heat
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e. ticks, poison ivy) (L M H) snakes / spiders	☐ Radiation (i.e. alpha, sun, laser) (L M H)
☐ Sound (i.e. machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☒ Driving (i.e. car, ATV, boat, dozer) (L M H) Rough Terrain

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss these methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes

☒ **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - *(See statements below)*

☐ Elimination	☐ Substitution	☐ Isolation
☐ Engineering controls	☐ Administrative controls	☐ Monitoring
☐ General PPE Usage	☐ Hearing Conservation	☐ Respiratory Protection
☐ Personal Hygiene	☐ Exposure Guidelines	☐ Decon Procedures
☐ Emergency Action Plan (EAP)	☐ Fall Protection	☐ Work Zones/Site Control
☐ JLA to be developed/used ***(specify)***	☐ LPO conducted ***(specify job/JLA)***	☐ Traffic Control
		☐ Other ***(specify)***

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Doug Solon ARCADIS	0830		DS
Ana Gutierrez Arcadis	0830	1430	AG
Garth Ferguson Arcadis	0930		GF

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

In the event of an injury, employees will call WorkCare at 1.800 455 6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720 344.3844

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720 344 3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.575.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- ☐ Lessons learned and best practices learned today: _____
- ☐ Incidents that occurred today: _____
- ☐ Any Stop Work interventions today? _____
- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

ARCADIS

Document Control Number:TGM - _____

TGM + project number plus date as follows: xxxxxxx.xx.xx.xxxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance at least daily.

Project Name: Huntsman			Project Location: Sunland, N.M.
Date: 9-15-15	Time: 815	Conducted by: D. Solon	Signature/Title: D. Solon
Client: Huntsman		Client Contact:	Subcontractor companies:

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 monitor WELL Sampling 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ If deviations, notify PM & client
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ All equipment checked & OK?
		☐ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and Assess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e. ladder, scaffold, trips) (L M H)	☐ Motion (i.e. traffic, moving water) (L M H)	☐ Mechanical (i.e. augers, motors) (L M H)
☐ Electrical (i.e. utilities, lightning) (L M H)	☐ Pressure (i.e. gas cylinders, wells) (L M H)	☒ Environment (i.e. heat cold, ice) (L M H) Heat
☐ Chemical (i.e., fuel, acid paint) (L M H)	☒ Biological (i.e. ticks poison ivy) (L M H) Snakes/spiders	☐ Radiation (i.e. alpha, sun, laser) (L M H) Sun Exposure
☐ Sound (i.e. machinery, generators) (L M H)	☐ Personal (i.e. alone, night, not fit) (L M H)	☐ Driving (i.e. car, ATV, boat, dozer) (L M H)

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss these methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes

☒ **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - *(See statements below)*

☐ Elimination	☐ Substitution	☐ Isolation
☐ Engineering controls	☐ Administrative controls	☒ Monitoring
☒ General PPE Usage	☐ Hearing Conservation	☐ Respiratory Protection
☐ Personal Hygiene	☐ Exposure Guidelines	☐ Decon Procedures
☐ Emergency Action Plan (EAP)	☐ Fall Protection	☐ Work Zones/Site Control
☐ JLA to be developed/used *(specify)*	☐ LPO conducted *(specify job/JLA)*	☐ Traffic Control
☐	☐	☐ Other *(specify)*
☐	☐	☐

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Doug Solon ARCADIS	DS 815		DS
Ana Gutierrez Arcadis	AG 815		AG

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

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In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.626.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment

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- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things | **WorkCare** - 1.800.455.6155

ARCADIS

Document Control Number:TGM - _____
TGM + *project number plus date as follows: xxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance at least daily.

Project Name: Huntsman			Project Location: Sunland NM
Date: 9-16-15	Time: 0750	Conducted by: S. Solon	Signature/Title: S. Solon Field Supervisor
Client:		Client Contact:	Subcontractor companies:

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 monitor Well Sampling 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

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☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

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		☒ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **Assess** the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

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☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☒ Environment (i.e., heat, cold, ca) (L M H) Heat
☐ Chemical (i.e., fuel, acid, paint,) (L M H)	☒ Biological (i.e., ticks, poison ivy) (L M H) snakes/Spiders	☐ Radiation (i.e., alpha, sun, laser) (L M H) Sun
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e., alone, night, no fit) (L M H)	☒ Driving (i.e., car, ATV, boat, dozer) (L M H) Debris onsite

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

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☐ Personal Hygiene	☐ Exposure Guidelines	☐ Decon Procedures
☐ Emergency Action Plan (EAP)	☐ Fall Protection	☐ Work Zones/Site Control
☐ JLA to be developed/used *(specify)*	☐ LPO conducted *(specify job/JLA)*	☐ Traffic Control
☐	☐	☐ Other *(specify)*
☐	☐	☐

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Doug Soton ARCADIS	0750		DS
Ana Gutierrez Arcadis	0750		AG

Important Information and Numbers

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In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.575.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
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- ☐ Incidents that occurred today: _____
- ☐ Any Stop Work interventions today? _____
- ☐ Corrective/Preventive Actions needed for future work: _____
- ☐ Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

ARCADIS

DAILY LOG

Project / No. LA003185.250 Page ____ of ____

Site Location Huntsman - Sunland Park NM Date 9-14-15

Subject Qrtly GW Sampling Prepared By D. Solon

Time	Description of Activities
0820	D.S. / A.G. on site
0825	Tailgate meeting
0840	Began gauging wells
0920	Setup on MW-17. Began purging
0955	Sampled MW-17 - BENZENE - 3 VOA's
	Field Dup FD091415 - BENZENE - 3 VOA's
1015	SETUP on MW-11 - Began purging
1050	Sampled MW-11 - BENZENE - 3 VOA's
1110	Returned to office
1240	onsite - Setup on MW-3S
1300	Began Purging
1330	Sampled MW-3S - BENZENE - 3 VOA's
1340	Field Blank - FB091415 - DI H_2O 3 VOA's
1345	SETUP on MW-3D Began Purging
1415	Sampled MW-3D - BENZENE - 3 VOA's
1425	Equipment Blank - EB091415 - DI H_2O over probe
1430	Returned to office
1445	Package coolers for shipping
1500	Travel to FEDEX to drop off

ARCADIS

DAILY LOG

Project / No. LA003185.250 Page ____ of ____

Site Location Huntsman - Sunland Park, NM Date 9-15-15

Subject Qrtly GW Sampling Prepared By D. Solon

Time	Description of Activities
0812	- DS/AG onsite
0915	- Tailgate meeting - GF onsite
0820	- Setup on MW-65 - Began purging
0905	- sampled MW-65 - BENZENE - 3 VOA's
0910	- setup on MW-60
0925	- Began Purging
0955	- Sampled MW-60 - BENZENE - 3 VOA's
1000	- Field Blank - FB091515 - 3 VOA's DI H2O
1008	- SETup on ~~SS~~ MW-95
1015	- Began Purging
1045	- Sampled MW-95 - BENZENE - 3 VOA's
1100	- Return to office
1250	- onsite - setup on MW-05
1310	- Began purging
1340	- Sampled MW-05 - BENZENE 3 VOA's
1355	- Equipment Blank - EB091515 - 3 DI H2O over o/w Probe
1400	- Return to office
1415	- Package samples for shipping
1430	- FEDEX for drop off

ARCADIS

DAILY LOG

Project / No. LA 003185.250 Page ____ of ____

Site Location Huntsman - Sunland Park, NM Date 9-16-15

Subject Qrtly GW Sampling Prepared By D. Solon

Time	Description of Activities
0750	- arrive at site DS/AG - TA/gate
0905	- Setup on MW-8 - Began purging
0935	- Sampled MW-8 - BENZENE 3 VOA's / PAH 3 VOA's
	- Duplicate FD091615 - PAH 3 VOA's
0850 ~~0905~~	- Equipment Blank - EB091615 - DI H2O over o/w Probe for EB
	- Field Blank - FB091615 - 3 VOA's DI H2O - Both EB & FB sampled for PAH / BENZENE
0905	- Setup on MW-10 Began purging
0940	- Sampled MW-10 - BENZENE 3 VOA's
0945	- Decon Equipment
0955	- observed stormwater effluent locations - all locations sealed w/ concrete
	- Recon around the perimeter fence line for security check
1015	- arrived back at office
	- packaged equipment
	- shipped samples to FEDEX

Huntsman Qrtly Sampl Sept. 2015

9-14-15 A.G. D.S.

0820 onsite
0825 Tailgate meeting
0840 Began Gauging wells
0920 Set up on MW-17
Began purging
0955 Sampled MW-17 - Benzene
→ Field Dup FD091415 - Benzene
1015 Set up on MW-11
Began purging 3-VOA's
1050 Sampled MW-11 - Benzene
~~1113~~ Returned to office
1240 Set up on MW-35
1300 Began Purging 3VOA's
1330 Sampled MW-35 - Benzene
1340 Field Blank - FB091415 - Benzene DI H2O 3VOA's
1345 Set up on MW-3D
Began Purging
1415 Sampled MW-3D - Benzene 3-VOA's
1425 Equipment Blank - EB091415 - Benzene - 3VOA's o/w Pibe. DI
1430 - Return to office
1445 - Package coolers for shipping
1500 - FEDEX to drop off coolers

DS

Cont. Huntsman Qrtly Sampling Sept 2015

9-15-15 A.G./D.S.

0812 - onsite
0815 - Tailgate meeting GF onsite
0820 - Set up on MW-6S
0830 - Began purging
0905 Sampled MW-6S - Benzene 3-VOA's
0910 - Set up on MW-6D
0925 - Began purging
0955 - Sampled MW-6D - Benzene 3 VOA's
1000 - Field Blank - FB091515 - Benzene 3 VOA's - DI H2O
1008 - Set up on MW-9S
1015 - Began purging
1045 - sampled MW-9S - Benzene 3-VOA's
1100 - Return to office
1250 - onsite - Set up on MW-05
1310 - Began purging
1340 - Sampl MW-05 - Benzene 3 VOA's
1355 - Equipment Blank - EB091515 - Benzene 3VOA's
1400 - Return to office
1415 - Packaged samples for shipping
1430 - FEDEX for drop off

DS

Cont: Huntsman Orthy S slug SEPT. 2015

9-16-15 DS/AG

750 - arrive at site - TA. Igate
0805 - SETUP on MW-8
- Began purging
0835 - sampled MW-8 - BENZENE/PAH
- Duplicate FD091615 - [redacted]/PAH
900 - Equipment Blank - EB091615 - BENZENE/PAH
0850 - Field Blank - FB091615 - BENZENE/PAH
DI H2O for EB & FB samples
0905 setup on MW-10 - began purging
0940 - Sampled MW-10 - BENZENE
3 VOA's
0945 - Decon equipment
0955 - Observed SW Effluent locations - all closed and sealed
- drove around perimeter for Safety and security check
10:15 - arrived back at office
Packed up equipment
Shipped samples to Icon LX

ARCADIS
Infrastructure · Water · Environment · Buildings

WELL GAUGING LOG

Site Name: Huntsman

Project Number: LA003185.000

Date & Time: 091415 / 0840

water column height = (well depth in feet) - (initial depth to water in feet) reading from Top of Casing

Well Gauging Information

Well ID	Date/Time	PID (ppm)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness	Comments
[redacted]						
[redacted]						Plugged
MW-3S	091415/0840	0.00		4.84		
MW-3D	✓✓ 10895	0.00		4.73		
[redacted]		~~0.00~~				
MW-5	✓✓ 10905	~~0.00~~	37.2	4.30		
MW-6S	✓✓ 10850	0.00		5.62		
MW-6D	✓✓ 10855	0.00		5.63		
[redacted]						
MW-8	✓✓ 10910	3.7		3.98		
MW-9S	✓✓ 10900	0.00		5.27		
[redacted]						Plugged
MW-10	✓✓ 10920	25.2		7.46		Hydrocarbon odor
MW-11	✓✓ 10915	0.0		6.32		
[redacted]						
[redacted]						Plugged
[redacted]						
[redacted]						
[redacted]						
MW-17	✓✓ 10921	0.0		6.70		hydrocarbon odor.
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

Equipment and Decon Procedures

Gauging Equipment	water level meter. PID
Decon Procedures	water and liquinox

file stamp

ARCADIS

WATER SAMPLING LOG

Date 091415

Project No LA003185.000 | Sample Personnel DS, AG
Site Name Huntsman | Sample ID MW-17
Site Location Huntsman | Duplicate ID FD091415, ~~FB091415~~ AG
Site/Well No. MW-17 | Start pump 0919 | Stop pump 1005
Weather 75°F | Start sampling 0955 | Stop sampling 1005

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing | MP Elevation (ft)

Depth to Water before/after (ft) 6.70 / | Casing Diameter (in) 4"

Water Column in Well [1] (ft) | Evacuation Vol./Rate ~300 mg/L

Volume per foot in Well [2] | Pump Intake Depth (ft)

Total Volume in Well [3] | Evacuation Method Peristaltic pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0925		7.28	11,741	24.8	0.24		30.7	-126.3	6.72	Strong hydro-
0930		7.28	11,711	24.2	0.16		19.2	-131.7	6.72	carbon odor.
0935		7.29	11,572	24.2	0.14		15.1	-131.8	6.72	Slight yellow
0940		7.28	11,628	24.1	0.11		5.34	-136.8	6.72	tint on water.
0945		7.28	11,607	24.0	0.10		7.13	-139.4	6.72	
0950		7.28	11,610	23.9	0.10		4.58	-140.1	6.72	
0955	3Gal	7.28	11,579	24.1	0.09		2.43	-139.9	6.72	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+ - 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: Field ~~Blank~~ Duplicate (FD 091415) at 0955.
~~Field Blank (FB~~ AG Pumped 3 Gals

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.6

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ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 091415

Project No	LA003185.000	Sample Personnel	DS, AG		
Site Name	~~MW-11~~ Huntsman	Sample ID	MW-11		
Site Location	Huntsman	Duplicate ID			
Site/Well No.	MW-11	Start pump	1014	Stop pump	1100
Weather	82°F	Start sampling	1050	Stop sampling	1100

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	6.28 / 8.58	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or µS/cm)	Temp [4] (°C °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1020		7.24	9,147	25.8	0.17	1.53	-117.8	6.75	Slight hydro-
1025		7.26	8,978	26.2	0.10	2.17	-124.1	7.10	carbon odor.
1030		7.29	8,729	25.8	0.06	1.75	-131.4	7.50	Slight yellow
1035		7.32	6,751	26.1	0.04	2.45	-140.2	7.88	tint.
1040		7.33	6,589	26.3	0.04	2.54	-144.6	8.12	
1045		7.34	7,844	26.1	0.04	2.20	-147.6	8.35	
1050	3 Gal	7.34	6,395	26.0	0.03	2.48	-150.7	8.58	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol. below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft).
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: _____

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
5" = 0.39 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.60

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ARCADIS

WATER SAMPLING LOG

Date 091415

Project No LA003185.000
Site Name Huntsman
Site Location Huntsman
Site/Well No. MW-35
Weather

Sample Personnel DS, AG
Sample ID MW-35
Duplicate ID FB091415
Start pump 1250 Stop pump 1340
Start sampling 1330 Stop sampling 1340

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft)

Depth to Water before/after (ft) 4.87 / 5.57
Casing Diameter (in) 4"
Water Column in Well [1] (ft)
Evacuation Vol./Rate ~300 mg/L
Volume per foot in Well [2]
Pump Intake Depth (ft)
Total Volume in Well [3]
Evacuation Method Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	(%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1300		7.43	4,196	23.1	0.16		2.07	-138.9	5.47	
1305		7.46	4,198	23.1	0.15		1.95	-143.2	5.56	
1310		7.48	4,192	23.1	0.12		2.20	-145.2	5.56	
1315		7.50	4,186	23.1	0.12		2.99	-146.9	5.56	
1320		7.50	4,193	22.9	0.10		2.49	-146.1	5.57	
1325		7.51	4,199	23.1	0.11		3.03	-146.9	5.57	
1330	3G.	7.51	4,194	23.0	0.09		3.16	-146.1	5.57	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+ - 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Field Blank (FB091415) at 1340

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.02 8" = 2.60

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ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 091415

Project No	LA003185.000	Sample Personnel	DS, AG
Site Name	huntsman	Sample ID	MW-3D
Site Location	huntsman	Duplicate ID	EB091415
Site/Well No.	MW-3D	Start pump	1339 Stop pump 1425
Weather		Start sampling	1415 Stop sampling 1425

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	4.82 / 4.85	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1345		7.27	13,630	21.6	0.23	5.98	-106.6	4.85	
1350		7.28	13,628	21.4	0.16	4.88	-109.9	4.85	
1355		7.29	13,584	21.4	0.15	5.24	-111.4	4.85	
1400		7.29	13,595	21.3	0.12	4.02	-112.5	4.85	
1405		7.30	13,554	21.1	0.12	4.54	-113.5	4.85	
1410		7.30	13,550	21.1	0.11	4.08	-114.4	4.85	
1415	3 Gal	7.30	13,548	21.1	0.08	2.38	-114.8	4.85	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(< 10* or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40 ml	3	None

Remarks: Equipment Blank (EB091415) at 1425

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
[illegible]" = 0.30 2.5" = 0.26 3.5" = 0.50 5" = 1.04 [illegible]" = 2.00

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ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 091515

Project No	LA003185.000	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-6S
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-6S	Start pump	0828 Stop pump 0915
Weather		Start sampling	0905 Stop sampling 0915

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	5.80/7.45	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C or °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0835		7.11	13,687	25.0	0.12	7.27	-121.2	6.27	water has a
0840		7.11	13,764	25.1	0.08	4.16	-128.5	6.53	yellow tint.
0845		7.12	13,804	25.1	0.06	4.46	-136.6	6.78	
0850		7.12	13,827	25.2	0.04	4.75	-140.5	6.88	
0855		7.12	13,849	25.3	0.04	4.05	-145.5	7.02	
0900		7.12	13,861	25.5	0.04	4.38	-145.4	7.25	
0905		7.12	13,871	25.5	0.04	5.79	-146.5	7.45	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+ - 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol. below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft.)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: _____

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
2.5" = 0.26 3.5" = 0.50 5" = 1.02

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ARCADIS

WATER SAMPLING LOG

Date 091515

Project No LA003185.000

Site Name Huntsman

Site Location Huntsman

Site/Well No. MW-6D

Weather

Sample Personnel DS, AG

Sample ID MW-6D

Duplicate ID FB091515

Start pump 0918 Stop pump 1005

Start sampling 0955 Stop sampling 1005

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft)

Depth to Water before/after (ft) 5.60 / 5.60 Casing Diameter (in) 4"

Water Column in Well [1] (ft) Evacuation Vol./Rate ~300mg/L

Volume per foot in Well [2] Pump Intake Depth (ft)

Total Volume in Well [3] Evacuation Method Peristatic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	(%)	Turbidity (NTU)	ORP [4] (mV)	Other	Appearance (Clarity, Color, Odor)
0925		7.37	14,880	23.5	0.24		16.6	-91.1	5.60	
0930		7.38	14,915	23.4	0.17		12.8	-95.4	5.60	
0935		7.38	14,923	23.3	0.14		14.5	-98.4	5.60	
0940		7.39	14,97	23.3	0.12		10.6	-99.5	5.60	
0945		7.39	14,915	23.3	0.12		9.61	-100.2	5.60	
0950		7.39	14,913	23.2	0.12		9.94	-100.4	5.60	
0955	3Gal	7.39	14,901	23.1	0.12		10.7	-100.4	5.60	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+ - 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Field Blank (FB091515) at 1000

TUBING DIAMETER VOLUMES (In Milliliters per Foot): 0.25" = 9.65; 0.5" = 38.61; 0.375" = 21.72; 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot): 1.0" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 6" = 1.46; 1.5" = 0.09; 2.5" = 0.26; 3.5" = 0.50; 5" = 1.02; 8" = 2.60

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ARCADIS

WATER SAMPLING LOG

Date 091515

Project No	LA003185.000	Sample Personnel	AG, DS
Site Name	Huntsman	Sample ID	MW-9S
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-9S	Start pump	1008
		Stop pump	1055
Weather		Start sampling	1045
		Stop sampling	1055

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) ______

Depth to Water before/after (ft)	5.22 / 5.24	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or µS/cm)	Temp [4] (°C °F)	DO [4] (mg/L)	DO (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1015		7.28	13,393	24.9	0.21		3.39	-143.5	5.24	
1020		7.28	13,340	24.9	0.13		2.57	-144.6	5.24	
1025		7.29	13,319	24.9	0.11		3.69	-146.9	5.24	
1030		7.29	13,277	25.0	0.09		4.09	-148.4	5.24	
1035		7.29	13,258	25.0	0.08		3.52	-148.9	5.24	
1040		7.30	13,237	25.0	0.07		2.93	-149.9	5.24	
1045		7.30	13,227	25.0	0.07		3.68	-150.7	5.24	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+ - 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol. below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks:

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
5" = 0.?? 2.5" = 0.26 3.5" = 0.50 5" = 1.02 ? = 2.?

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ARCADIS

WATER SAMPLING LOG

Date 091515

Project No	LA003185.000	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-8S
Site Location	Huntsman	Duplicate ID	EB091515
Site/Well No.	MW-8	Start pump	1303 Stop pump 1350
Weather		Start sampling	1340 Stop sampling 1350

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft)

Depth to Water before/after (ft)	4.27 / 5.74	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump.

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1310		6.71	14,449	26.9	0.20	11.1	-126.4	4.78	Hydrocarbon
1315		6.86	14,594	26.7	0.16	11.5	-122.7	5.02	Odor.
1320		6.85	14,628	26.7	0.14	12.0	-119.0	5.15	
1325		6.74	14,592	26.6	0.12	8.34	-136.2	5.29	
1330		6.69	14,591	26.8	0.11	6.84	-150.3	5.43	
1335		6.67	14,670	26.8	0.11	9.82	-163.9	5.59	
1340	3Gal	6.65	14,748	26.9	0.09	10.4	-175.9	5.74	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+ - 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Equipment Blank (EB091515) at 1355

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
5" = 0.39 2.5" = 0.26 3.5" = 0.50 5" = 1.01 8" = 2.60

ARCADIS

WATER SAMPLING LOG

Date 091615

Project No LA003185000
Sample Personnel DS, AG
Site Name Huntsman
Sample ID MW-8
Site Location Huntsman
Duplicate ID FD091615
Site/Well No. MW-8
Start pump 0801 Stop pump 0845
Weather
Start sampling 0835 Stop sampling 0845

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft)

Depth to Water before/after (ft) 4.02/6.02 Casing Diameter (in) 4"

Water Column in Well [1] (ft) Evacuation Vol./Rate ~300 mg/L

Volume per foot in Well [2] Pump Intake Depth (ft)

Total Volume in Well [3] Evacuation Method Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	(%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0805		7.33	7,843	26.5	0.34		15.6	-187.2	4.42	Strong hydro-
0810		7.25	7,276	27.3	0.19		9.40	-191.9	4.87	carbon odor.
0815		7.23	6,929	27.6	0.12		17.2	-195.8	5.08	Solids on
0820		7.22	6,924	27.6	0.11		9.86	-200.8	5.40	water.
0825		7.21	6,907	27.6	0.10		8.77	-203.7	5.61	
0830		7.20	6,830	27.7	0.08		9.60	-210.1	5.90	
0835	3Gal	7.20	6,810	27.8	0.08		14.0	-212.9	6.02	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - PAH well	40ml	3	None
VOA - PAH FD	↓	↓	↓
VOA - PAH FB	↓	↓	↓
VOA - PAH EB	↓	↓	↓
VOA - Benzene well	↓	↓	↓
VOA - Benzene FB	↓	↓	↓
VOA - Benzene EB	↓	↓	↓

Remarks: Field Dup (FD091615) at 0835 F.Blank (FB091615) at 0850, Equipment Blank (EB091615) at 0900.

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
.5" = 0.?? 2.5" = 0.26 3.5" = 0.50 5" = 1.02 ?" = 2.6?

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ARCADIS

WATER SAMPLING LOG

Date 091615

Project No LA003185.000
Sample Personnel DS, AG
Site Name Huntsman
Sample ID MW-10
Site Location Huntsman
Duplicate ID
Site/Well No. MW-10
Start pump 0905
Stop pump 0950
Weather
Start sampling 0940
Stop sampling 0950

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing
MP Elevation (ft)
Depth to Water before/after (ft) 7.33/8.10
Casing Diameter (in) 4"
Water Column in Well [1] (ft)
Evacuation Vol./Rate ~300mg/L
Volume per foot in Well [2]
Pump Intake Depth (ft)
Total Volume in Well [3]
Evacuation Method Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	(%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0910		7.25	9,180	24.8	0.15		32.7	-228.2	7.90	hydrocarbon
0915		7.24	8,913	24.9	0.11		12.9	-209.8	8.00	odor.
0920		7.24	9,107	25.1	0.09		8.86	-198.1	8.03	yellow tint on
0925		7.23	8,539	25.1	0.08		8.92	-190.9	8.05	water.
0930		7.22	8,392	25.2	0.08		8.37	-189.6	8.08	
0935		7.21	8,173	25.3	0.07		7.09	-194.6	8.09	
0940	3Gal	7.21	8,144	25.4	0.07		8.79	-199.3	8.10	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks:

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65   0.5" = 38.61
0.375" = 21.72   0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04   2" = 0.16   3" = 0.37   4" = 0.65   6" = 1.46
1.5" = 0.09   2.5" = 0.26   3.5" = 0.50   5" = 1.04   8" = 2.6

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ALS Environmental

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Chain of Custody Form

Page 1 of 1

COC ID: 131016

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	LA003185	Project Name	Brickhland NM Semi Annual GW Samp	A	8260_LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Ratchford	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Preserv.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	091415	0955	W	None	3	X										
2	MW-11		1050	W		3	X										
3	FD091415		—	W		3	X										
4	MW-35		1330	W		3	X										
5	FB091415		1340	W		3	X										
6	MW-3D		1415	W		3	X										
7	EB091415		1425	W		3	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) TAT: 10 days Other:

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Ana Gutierrez	091415	1530	
Relinquished by:	Date:	Time:	Received by (Laboratory):
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes:

Cooler ID: | Cooler Temp.:

QC Package: (Check One Box Below)

QC Level: STD

Other:

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.

ALS Environmental

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Chain of Custody Form

Page 1 of 1

COC ID: 131014

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	LA003185	Project Name	Brickhland NM Semi Annual GW Samp	A	8260_LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Ratchford	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-8	091615	0835	W	Y	6	X	X									
2	FD091615	↓	—	W	Y	3		X									
3	FB091615		0850	W	Y	6	X	X									
4	FB091615		0900	W	Y	6	X	X									
5	MW-10	↓	0940	W	N	3	X										
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) TAT: 10 days Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Ana Gutierrez	091615	1200		
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID / Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	QC Package: (Check One Box Below)

QC Level STD

Other:

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.

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 131015

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	LA003186	Project Name	Smithland NW Semi Annual GW Samp	A	8260_LL_W (8260 Benzene (Ungrad.))
Work Order		Project Number	LA003186	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Kalshfield	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/Prov/Zip	Baton Rouge, LA 70816	City/Prov/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3599	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Preservative	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6S	091515	0905	W	None	3	X										
2	MW-6D		0955	W	None	3	X										
3	FB091515		1000	W	None	3	X										
4	MW-9S		1045	W	None	3	X										
5	MW-5		1340	W	None	3	X										
6	FB091515	↓	1355	W	None	3	X										
7																	
8																	
9																	
10																	

Relinquished by: Ana Gutierrez — Shipment Method: FedEx — Required Turnaround Time (Check One) — Results Due Date

Relinquished by	Date	Time	Received by	Notes
Ana Gutierrez	091515	1445		
Relinquished by:	Date	Time	Received by Laboratory:	
Logged by Laboratory:	Date	Time	Checked by Laboratory:	

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4°C 9-5035

QC Package: (Check One Box Below)

QC Level: STD

Other:

Notes:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed to 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.

ARCADIS

Document Control Number: TGM - _____

TGM + *project number plus date as follows: x.xxxxxxx.xx.xx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name: Huntsman		**Project Location:** Sunland NM	
Date: 12-2-15	**Time:** 815	**Conducted by:** D. Solon	**Signature/Title:** D M Solon
Client: Huntsman		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 monitor well Sampling/Gauging 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Any Stop Work Interventions yesterday?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ If deviations, notify PM & client
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☒ All equipment checked & OK?
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☐ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e., ladder, scaffold, trips) (L M H)	☐ Motion (i.e., traffic, moving water) (L M H)	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☒ Environment (i.e., heat, cold, ice) (L M H) Cold
☐ Chemical (i.e., fuel, acid, paint) (L M H)	☒ Biological (i.e., ticks, poison ivy) (L M H) Snakes / Spiders	☒ Radiation (i.e., alpha, sun, laser) (L M H) Sun Exposure
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e., alone, night, not fit) (L M H)	☐ Driving (i.e., car, ATV, boat, dozer) (L M H)

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

- [X] **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - (*See statements below*)

[ ] Elimination	[ ] Substitution	[ ] Isolation
[ ] Engineering controls	[ ] Administrative controls	[X] Monitoring
[X] General PPE Usage	[ ] Hearing Conservation	[ ] Respiratory Protection
[ ] Personal Hygiene	[ ] Exposure Guidelines	[ ] Decon Procedures
[ ] Emergency Action Plan (EAP)	[ ] Fall Protection	[ ] Work Zones/Site Control
[ ] JLA to be developed/used *(specify)*	[ ] LPO conducted *(specify job/JLA)*	[ ] Traffic Control
[ ]	[ ]	[ ] Other *(specify)*
[ ]	[ ]	[ ]

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Doug Solon ARCADIS Doug Solon	DS 815		DS
Ana Gutierrez Arcadis	AG 815		AG

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments

If it is necessary to STOP THE JOB, I will perform TRACK; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard

Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- [ ] Lessons learned and best practices learned today: _____
- [ ] Incidents that occurred today: _____
- [ ] Any Stop Work interventions today? _____
- [ ] Corrective/Preventive Actions needed for future work: _____
- [ ] Any other H&S issues: _____

Keep H&S 1st in all things

WorkCare - 1.800.455.6155

ARCADIS

Document Control Number:TGM - _____
TGM + *project number plus date as follows: x.xxxxxx.xxxx.xxxxx - dd/mm/year*

TAILGATE HEALTH & SAFETY MEETING FORM

This form documents the tailgate meeting conducted in accordance with the Project HASP. Personnel who perform work operations on-site during the day are required to attend this meeting and to acknowledge their attendance, at least daily.

Project Name: Huntsman		**Project Location:** Sunland NM	
Date: 12-3-15	**Time:** 805	**Conducted by:** D. Solon	**Signature/Title:** Dan Solon
Client: Huntsman		**Client Contact:**	**Subcontractor companies:**

TRACKing the Tailgate Meeting

Think through the Tasks (list the tasks for the day):

1 Monitor Well Sampling 3 _____ 5 _____

2 _____ 4 _____ 6 _____

Other Hazardous Activities - Check the box if there are any other ARCADIS, Client or other party activities that may pose hazards to ARCADIS operations ☐ If there are none, write "None" here: _____

If yes, describe them here: _____

How will they be controlled? _____

Prework Authorization - check activities to be conducted that require permit issuance or completion of a checklist or similar before work begins:

	Doc #		Doc #		Doc #
☐ Not applicable		☐ Working at Height		☐ Confined Space	
☐ Energy Isolation (LOTO)		☐ Excavation/Trenching		☐ Hot Work	
☐ Mechanical Lifting Ops		☐ Overhead & Buried Utilities		☐ Other permit	

Discuss following questions (for some review previous day's post activities). **Check if yes :**

☐ Incidents from day before to review?	☐ Lessons learned from the day before?	☐ Topics from Corp H&S to cover?
☐ Any corrective actions from yesterday?	☐ Will any work deviate from plan?	☐ Any Stop Work Interventions yesterday?
☐ JLAs or procedures are available?	☐ Field teams to "dirty" JLAs, as needed?	☐ If deviations, notify PM & client
☒ Staff has appropriate PPE?	☒ Staff knows Emergency Plan (EAP)?	☒ All equipment checked & OK?
		☐ Staff knows gathering points?

Comments: _____

Recognize the hazards (check all those that are discussed) (Examples are provided) and **A**ssess the Risks (Low, Medium, High - circle risk level) - Provide an overall assessment of hazards to be encountered today and briefly list them under the hazard category.

☐ Gravity (i.e., ladder, scaffold, trips) (L M H)	☐ Motion (i.e., traffic, moving water) (L M H)	☐ Mechanical (i.e., augers, motors) (L M H)
☐ Electrical (i.e., utilities, lightning) (L M H)	☐ Pressure (i.e., gas cylinders, wells) (L M H)	☒ Environment (i.e. heat, cold, ice) Cold (L M H)
☐ Chemical (i.e., fuel, acid paint) (L M H)	☒ Biological (i.e., ticks, poison ivy) Snakes/Spiders (L M H)	☒ Radiation (i.e., alpha, sun, laser) Cold/Sun Exposure (L M H)
☐ Sound (i.e., machinery, generators) (L M H)	☐ Personal (i.e., caffeine, night, not fit) (L M H)	☐ Driving (i.e. car, ATV, boat, dozer) (L M H)

Continue TRACK Process on Page 2

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

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- [X] STOP WORK AUTHORITY (Must be addressed in every Tailgate meeting - *(See statements below)*

[ ] Elimination	[ ] Substitution	[ ] Isolation
[ ] Engineering controls	[ ] Administrative controls	[X] Monitoring
[X] General PPE Usage	[ ] Hearing Conservation	[ ] Respiratory Protection
[ ] Personal Hygiene	[ ] Exposure Guidelines	[ ] Decon Procedures
[ ] Emergency Action Plan (EAP)	[ ] Fall Protection	[ ] Work Zones/Site Control
[ ] JLA to be developed/used *(specify)*	[ ] LPO conducted *(specify job/JLA)*	[ ] Traffic Control
[ ]	[ ]	[ ] Other *(specify)*
[ ]	[ ]	[ ]

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Doug Solon Arcadis Doug Solon	DS 805		
Ana Gutierrez Arcadis	AG 805		AG

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

In the event of an injury, employees will call WorkCare at 1.800.455.6155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3644 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments

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Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- [ ] Lessons learned and best practices learned today: _____
- [ ] Incidents that occurred today: _____
- [ ] Any Stop Work interventions today? _____
- [ ] Corrective/Preventive Actions needed for future work: _____
- [ ] Any other H&S Issues: _____

Keep H&S 1st in all things | WorkCare - 1.800.455.6155

TAILGATE HEALTH & SAFETY MEETING FORM - Pg. 2

Control the hazards (Check all and discuss those methods to control the hazards that will be implemented for the day): Review the HASP, applicable JLAs, and other control processes. Discuss and document any additional control processes.

- [X] **STOP WORK AUTHORITY** (Must be addressed in every Tailgate meeting - *(See statements below)*

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[ ] Personal Hygiene	[ ] Exposure Guidelines	[ ] Decon Procedures
[ ] Emergency Action Plan (EAP)	[ ] Fall Protection	[ ] Work Zones/Site Control
[ ] JLA to be developed/used *(specify)*	[ ] LPO conducted *(specify job/JLA)*	[ ] Traffic Control
[ ]	[ ]	[ ] Other *(specify)*
[ ]	[ ]	[ ]

Signature and Certification Section - Site Staff and Visitors

Name/Company/Signature	Initial & Sign in Time	Initial & Sign out Time	I have read and understand the
Doug Solon ARCADIS	DS 805		
Ana Gutierrez Arcadis	~~AG~~ 805		AG

Important Information and Numbers

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns

In the event of an injury, employees will call WorkCare at 1.800.455.8155 and then notify the field supervisor who will, in turn, notify Corp H&S at 1.720.344.3844.

In the event of a motor vehicle accident, employees will notify the field supervisor who will then notify Corp H&S at 1.720.344.3844 and then Corp Legal at 1.720.344.3756.

In the event of a utility strike or other damage to property of a client or 3rd party, employees will immediately notify the field supervisor, who will then immediately notify Corp Legal at 1.678.373.9556 and Corp H&S at

Visitor Name/Co - not involved in work

In	Out
In	Out
In	Out
In	Out

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment

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Post Daily Activities Review - Review at end of day or before next day's work (Check those applicable and explain:)

- [ ] Lessons learned and best practices learned today:
- [ ] Incidents that occurred today:
- [ ] Any Stop Work interventions today?
- [ ] Corrective/Preventive Actions needed for future work:
- [ ] Any other H&S issues:

Keep H&S 1st in all things | **WorkCare - 1.800.455.8155**

ARCADIS

DAILY LOG

Project / No. LA003185 Page 1 of 1

Site Location Sunland Park NM Date 12-2-15

Subject Huntsman Qrtly sampling Prepared By D. Solon

Time	Description of Activities
0810	on site
0815	Tailgate
0820	Began gauging wells
0905	Setup on MW-17
0910	Began pumping
0940	Sampled MW-17 - Benzene 3 VOA's, Field Dup - 3 VOA's
0950	Setup on MW-11 Began pumping
1030	Sampled MW-11 - Benzene - 3 VOA's
1045	Returned to office
1300	Setup on MW-35 Began pumping
1340	Sampled MW-35 - Benzene - 3 VOA's, Field Blank - 3 VOA's
1350	Setup on MW-3D - Began pumping
1425	Sampled MW-3D - Benzene - 3 VOA's, Equipment Blank - 3 VOA's
1435	Returned to office - Packaged & shipped samples from FedEx

ARCADIS

DAILY LOG

Project / No. LA003185 Page 1 of 1

Site Location Sunland Park NM Date 12-3-15

Subject Horizontal Qrtly sampling Prepared By D. Solon

Time	Description of Activities
800	on site
805	Tailgate
825	Setup on MW65 - Began pumping
0855	Sampled MW-65 - Benzene - 3 VOA's
0915	Setup on MW-6D - Began pumping
0945	Sampled MW-6D - Benzene, Field Blank - 3 VOA's DL
1000	Setup on MW-9S and began pumping
1030	Sampled MW 9S - Benzene - 3 VOA's
1055	Setup on MW-5 - Began Pumping
1125	Sampled MW-5 - Benzene - 3 VOA's - Equipment Blank - 3 VOA's DT
	off & p/u probe
1145	Returned to office - Ana packaged & shipped samples to EBDET

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ARCADIS

DAILY LOG

Project / No. LA003185 Page 1 of 1

Site Location Sunland Park Date 12-4-15

Subject Quarterly sampling Prepared By D. Solon

Time	Description of Activities
805	Arrive on site / Tailgate
815	Setup on MW-8 and began sampling
0850	Sampled MW-8 - PAH, Benzene, Field Dup - 3 VOA's
	Equipment Blank - PAH, Benzene - 3 VOA's ea
	Field Blank - PAH, Benzene - 3 VOA's ea
0912	Setup and started pumping
0945	Sampled MW-10 - Benzene - 3 VOA's
0950	Decon equipment returned to office
1015	Returned to office - packaged + shipped samples and equipment

ARCADIS
Infrastructure · Water · Environment · Buildings

WELL GAUGING LOG

Site Name: Huntsman

Project Number: LA003185.000

Date & Time: 120215 / 0815

water column height = (well depth in feet) - (initial depth to water in feet) reading from Top of Casing

Well Gauging Information

Well ID	Date/Time	PID (ppm)	Depth to Product (ft)	Depth to Water (ft)	Product Thickness	Comments
~~MW-4~~						
~~MW-[illegible]~~						Plugged
MW-3S	120215/	0.0	—	7.43		
MW-3D	✓✓	0.0	—	7.52		
~~MW-[illegible]~~						
MW-5	✓✓	308.5	—	6.91		Strong hydrocarbon Odor
MW-6S	✓✓	0.0	—	8.30		
MW-6D	✓✓	0.0	—	8.36		
~~MW-[illegible]~~						
MW-8	✓✓	14.2	—	6.63		
MW-9S	✓✓	0.0	—	7.87		
~~MW-[illegible]~~						Plugged
MW-10	✓✓	45.5	—	10.18		
MW-11	✓✓	0.0	—	8.86		
~~MW-[illegible]~~						
~~MW-[illegible]~~						Plugged
~~MW-[illegible]~~						
~~MW-[illegible]~~						
~~MW-[illegible]~~						
MW-17	✓✓	0.0	—	9.42		
~~WP-[illegible]~~						
~~WP-[illegible]~~						
~~WP-[illegible]~~						
~~WP-7~~						
~~WP-[illegible]~~						
~~WP-[illegible]~~						
~~WP-26S~~						
~~WP-[illegible]~~						
~~WP-27S~~						
~~WP-[illegible]~~						
~~WP-[illegible]~~						
~~WP-[illegible]~~						
~~WP-[illegible]~~						
~~WP-[illegible]~~						

Equipment and Decon Procedures

Gauging Equipment water level meter, PID

Decon Procedures water and liquinox

file stamp

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 120215

Project No	LA003185.2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-17
Site Location	Huntsman	Duplicate ID	FD120215
Site/Well No.	MW-17	Start pump	0906 / Stop pump 0950
Weather	40°F	Start sampling	0940 / Stop sampling 0950

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft) _____

Depth to Water before/after (ft)	9.41 / 9.44	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0910		7.06	12,912	22.6	0.50	17.40	-24.2	9.44	
0915		7.15	12,908	22.7	0.25	13.40	-68.1	9.44	
0920		7.19	12,861	22.8	0.19	10.50	-85.8	9.44	
0925		7.20	12,800	22.8	0.14	13.90	-98.6	9.44	
0930		7.21	12780	22.8	0.13	12.0	-102.6	9.44	
0935		7.21	12,770	22.9	0.12	16.9	-106.7	9.44	
0940	3Gal	7.21	12,784	22.9	0.11	16.0	-108.0	9.44	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Field Duplicate (FD120215) at 0940.

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.60

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ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 120215

Project No	LA003185.2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-11
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-11	Start pump	0956
Weather	40°F	Start sampling	1030
		Stop pump	1040
		Stop sampling	1040

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	8.82 / 11.22	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other OTW	Appearance (Clarity, Color, Odor)
1000		7.26	8,885	24.4	0.33		15.3	-80.6	9.22	
1005		7.26	8,566	24.3	0.12		10.6	-99.9	9.72	
1010		7.26	8,290	24.3	0.11		18.1	-108.0	10.12	
1015		7.26	8,125	24.4	0.08		12.6	-112.6	10.55	
1020		7.27	7,976	24.4	0.07		13.1	-116.9	10.80	
1025		7.37	7,739	24.4	0.06		13.4	-116.5	11.02	
1030	3Gal	7.02	7,545	24.3	0.06		12.2	-97.9	11.22	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: Yellow tint water

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.49
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.60

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 120215

Project No	LA00318S.2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-3S
Site Location	Huntsman	Duplicate ID	FB120215
Site/Well No.	MW-3S	Start pump	1305 Stop pump 1350
Weather	90°F	Start sampling	1340 Stop sampling 1350

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	7.51/8.40	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or µS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	DO [4] (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1310		7.24	8,441	21.3	0.37		13.6	-149.9	7.75	
1315		7.25	8,118	21.3	0.41		14.0	-120.0	7.90	
1320		7.25	7,914	21.3	0.49		12.4	-91.5	8.02	
1325		7.23	7,898	21.3	0.49		12.9	-86.4	8.10	
1330		7.25	7,878	21.3	0.50		11.0	-83.2	8.20	
1335		7.27	7,874	21.3	0.43		10.8	-82.9	8.31	
1340	3Gal	7.23	7,868	21.3	0.47		10.4	-81.8	8.40	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA- Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Field Blank (FB120215) at 1350

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65 0.5" = 38.61

0.375" = 21.72 0.75" = 86.8

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46

1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 120215

Project No	LA003185.2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-3D
Site Location	Huntsman	Duplicate ID	EB 120215
Site/Well No.	MW-3D	Start pump	1350 Stop pump 1435
Weather		Start sampling	1425 Stop sampling 1435

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	7.55 / 7.56	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L)	(%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1355		7.19	20,319	20.6	0.36		24.7	-69.9	7.56	
1400		7.24	20,086	20.6	0.21		21.4	-80.7	7.56	
1405		7.22	20,002	20.5	0.19		16.9	-85.2	7.56	
1410		7.19	19,849	20.4	0.15		15.2	-83.0	7.56	
1415		7.24	19,747	20.4	0.13		11.4	-76.7	7.56	
1420		7.24	19,655	20.3	0.13		10.7	-72.7	7.56	
1425	3Gal	7.25	19,602	20.3	0.12		8.27	-70.8	7.56	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)		(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Equipment Blank (EB120215) at 1435

TUBING DIAMETER VOLUMES (In Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.02 8" = 2.66

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ARCADIS

WATER SAMPLING LOG

Date 120315

Project No	LA003185.2015	Sample Personnel	DS, AG
Site Name	huntsman	Sample ID	MW-6S
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-6S	Start pump 0821	Stop pump 0805
Weather	35°F	Start sampling 0855	Stop sampling 0905

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft) ____

Depth to Water before/after (ft)	8.26 / 10.26	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Penstaltic pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0825		7.06	19,602	21.4	0.60	18.8	-21.1	8.62	yellow tint water
0830		7.10	19,451	21.8	0.23	13.5	-55.8	8.93	
0835		7.10	19,124	21.9	0.15	22.2	-72.1	9.23	
0840		7.08	18,859	21.9	0.13	16.8	-83.5	9.57	
0845		7.09	18,772	21.9	0.11	11.3	-88.3	9.73	
0850		7.09	18,648	22.1	0.10	12.4	-93.8	9.96	
0855	3	7.07	18,532	22.2	0.09	21.7	-99.1	10.26	
Stabalization Criteria:		(+/-) 0.1 su	(+/-) 3 %)	(+/-) 3 %)	(+/-) 10%)	(+/-) 10% or <1)	(+/-) 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: ____

TUBING DIAMETER VOLUMES (in Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.8"

WELL CASING DIAMETER VOLUMES (in Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.4
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = illegible 8" = 2.6

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ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 120315

Project No	LA003185.2015	Sample Personnel	DS, AG		
Site Name	Huntsman	Sample ID	MW-6D		
Site Location	Huntsman	Duplicate ID	FB120315		
Site/Well No.	MW-6D	Start pump	0910	Stop pump	0955
Weather	42°F	Start sampling	0945	Stop sampling	0955

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	8.33 / 8.36	Casing Diameter (in)	4"
Water Column in Well [1] (ft)	_____	Evacuation Vol./Rate	~300mg/L
Volume per foot in Well [2]	_____	Pump Intake Depth (ft)	
Total Volume in Well [3]	_____	Evacuation Method	Peristaltic pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other OTW	Appearance (Clarity, Color, Odor)
0915		7.30	21,929	21.5	0.29	15.0	-70.0	8.36	
0920		7.29	21,912	21.4	0.19	19.1	-74.0	8.36	
0925		7.31	21,896	21.5	0.15	13.4	-76.7	8.36	
0930		7.30	21,895	21.5	0.13	11.5	-78.2	8.36	
0935		7.31	21,854	21.6	0.12	10.8	-79.9	8.36	
0940		7.31	21,846	21.5	0.11	13.8	-81.2	8.36	
0945	3	7.31	21,788	21.5	0.12	11.1	-82.1	8.36	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol. below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Field Blank (FB120315) at 0955.

TUBING DIAMETER VOLUMES. (In Milliliters per Foot)

0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.8"

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 120315

Project No	LA003185.~~00~~ 2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-9S
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-9S	Start pump	0958
Weather		Start sampling	1030
		Stop pump	1040
		Stop sampling	1040

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	7.91 / 7.93	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1000		7.09	18,369	22.4	0.93	13.1	-94.9	7.93	
1005 ~~1030~~		7.13	18,379	22.7	0.25	27.2	-105.7	7.93	
1010 ~~1035~~		7.10	18,379	22.7	0.20	10.7	-109.1	7.93	
1015 ~~1040~~		7.03	18,381	22.9	0.15	12.3	-113.1	7.93	
1020 ~~1045~~		7.09	18,393	22.9	0.15	11.3	-115.1	7.93	
1025 ~~1050~~		7.06	18,397	22.9	0.10	13.8	-119.0	7.93	
1030	3	7.06	18,388	22.9	0.12	15.0	-117.9	7.93	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal ft) (X) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks: _____

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

WATER SAMPLING LOG

Date 120315

Project No	LA003185.2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-5
Site Location	Huntsman	Duplicate ID	EB120315
Site/Well No.	MW-5	Start pump	1052 / Stop pump 1135
Weather		Start sampling	1125 / Stop sampling 1135

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	6.86 / 8.20	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
1055		6.76	20,817	23.6	0.57	136	-59.5	7.08	
1100		6.78	20,821	23.6	0.21	72.8	-72.8	7.29	
1105		6.81	20,795	23.8	0.16	55.6	-79.4	7.47	
1110		6.77	20,708	23.9	0.12	33.2	-84.4	7.68	
1115		6.70	20,532	23.8	0.10	18.1	-86.7	7.83	
1120		6.60	20,224	23.6	0.08	11.8	-105.0	8.00	
1125		6.51	20,203	23.6	0.08	17.3	-150.2	8.20	
Stabalization Criteria:		+/- 0.1 su	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None
VOA - Benzene	40ml	3	None

Remarks: Equipment Blank (EB120315) at 1140

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.8"

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 120415

Project No	LA003185.2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-8
Site Location	Huntsman	Duplicate ID	FD 120415
Site/Well No.	MW-8	Start pump	0815 Stop pump 0855
Weather		Start sampling	0850 Stop sampling 0855

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing MP Elevation (ft) _____

Depth to Water before/after (ft)	6.53 / 8.91	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300 mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or uS/cm)	Temp [4] (°C °F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0820		7.27	8,828	23.7	0.37	13.6	-79.3	6.95	yellow tint water
0825		7.33	8,306	23.6	0.22	13.5	-94.7	7.25	
0830		7.32	8,269	23.7	0.18	11.9	-100.4	7.53	
0835		7.32	8,266	23.9	0.14	13.1	-106.2	7.85	
0840		7.32	8,275	23.9	0.14	13.7	-111.8	8.24	
0845		7.33	8,271	23.9	0.11	12.2	-115.3	8.50	
0850	3	7.32	8,270	24.0	0.11	12.5	-118.4	8.91	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (X) Pump Intake Depth (ft)

[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents		Container (Type & Size)	No. of bottles	Preservative
VOA - PAH	well	40ml	3	None
VOA - PAH	FD			
VOA - PAH	FB			
VOA - PAH	EB			
VOA - Benzene	well			
VOA - Benzene	FB			
VOA - Benzene	EB			

Remarks: Field Dup (FD 120415) at 0850, F.Blank (FB 120415) at 0855. Equipment Blank (EB 120415) at 0900.

TUBING DIAMETER VOLUMES (In Milliliters per Foot)

0.25" = 9.65 0.5" = 38.61

0.375" = 21.72 0.75" = 86.8"

WELL CASING DIAMETER VOLUMES (In Gallons per Foot)

1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46

1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

WATER SAMPLING LOG

Page 1 of 1

Date 12045

Project No	LA003185.2015	Sample Personnel	DS, AG
Site Name	Huntsman	Sample ID	MW-10
Site Location	Huntsman	Duplicate ID	
Site/Well No.	MW-10	Start pump	0912
Weather		Start sampling	0945
		Stop pump	0955
		Stop sampling	0955

EVACUATION DATA

Description of Measuring Point (MP) North-end top of well casing — MP Elevation (ft)

Depth to Water before/after (ft)	10.02 / 11.05	Casing Diameter (in)	4"
Water Column in Well [1] (ft)		Evacuation Vol./Rate	~300mg/L
Volume per foot in Well [2]		Pump Intake Depth (ft)	
Total Volume in Well [3]		Evacuation Method	Peristaltic Pump

Time	Volume (gal or L)	pH [4] (S.U.)	Spec. Cond [4] (mS/cm or µS/cm)	Temp [4] (°C/°F)	DO [4] (mg/L) (%)	Turbidity (NTU)	ORP [4] (mV)	Other DTW	Appearance (Clarity, Color, Odor)
0915		7.15	10,549	22.9	0.58	14.8	-105.0	10.35	Sheen, strong
0920		7.15	10,648	22.8	0.24	16.8	-111.1	10.48	hydrocarbon odor.
0925		7.15	10,480	22.8	0.17	14.1	-117.7	10.62	
0930		7.15	10,407	22.9	0.15	11.7	-122.9	10.72	
0935		7.15	10,292	23.1	0.12	14.3	-130.6	10.85	
0940		7.15	10,166	23.2	0.08	12.0	-141.6	10.96	
0945	3	7.15	10,165	23.3	0.08	9.78	-152.8	11.05	
Stabalization Criteria:		(+/- 0.1 su)	(+/- 3 %)	(+/- 3 %)	(+/- 10%)	(+/- 10% or <1)	(+/- 10 mV)	(n/a)	(n/a)

[1] – Low flow purging, use length of tubing. [2] – Low-flow use tubing vol.below. [3] – Low flow use Tubing Volume (gal/ft) (x) Pump Intake Depth (ft)
[4] – Stabalization criteria must be met for 3 consecutive readings (~3-5 minutes between readings).

CONTAINER DESCRIPTION

Container: Lab ☒ or ARCADIS ☐

Constituents	Container (Type & Size)	No. of bottles	Preservative
VOA - Benzene	40ml	3	None

Remarks:

TUBING DIAMETER VOLUMES (in Milliliters per Foot)
0.25" = 9.65 0.5" = 38.61
0.375" = 21.72 0.75" = 86.87

WELL CASING DIAMETER VOLUMES (in Gallons per Foot)
1.0" = 0.04 2" = 0.16 3" = 0.37 4" = 0.65 6" = 1.46
1.5" = 0.09 2.5" = 0.26 3.5" = 0.50 5" = 1.04 8" = 2.66

ARCADIS

Appendix C

Laboratory Analytical Reports

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

August 17, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15060423**

Laboratory Results for: **Brickland NM Semi Annual Sampling Huntsman**

Dear Tim,

ALS Environmental received 3 sample(s) on Jun 09, 2015 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: Dane.Wacasey
Dane J. Wacasey

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060423

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15060423-01	MW-10	Water		08-Jun-2015 14:20	09-Jun-2015 09:35	☐
HS15060423-02	EB060815	Water		08-Jun-2015 14:40	09-Jun-2015 09:35	☐
HS15060423-03	FB060815	Water		08-Jun-2015 15:00	09-Jun-2015 09:35	☐

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060423

Work Order Comments

- This report was revised August 17, 2015 in order to report non-detects as a <PQL value.

GCMS Volatiles by Method SW8260

Batch ID: R256157

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

'ient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060423
Sample ID: MW-10 Lab ID:HS15060423-01
Collection Date: 08-Jun-2015 14:20 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES - SW8260C		**Method:SW8260**				Analyst: PC
Benzene	**23**		**5.0**	**ug/L**	**1**	**15-Jun-2015 13:16**
Surr: 1,2-Dichloroethane-d4	*99.6*		*70-125*	*%REC*	*1*	*15-Jun-2015 13:16*
Surr: 4-Bromofluorobenzene	*98.0*		*72-125*	*%REC*	*1*	*15-Jun-2015 13:16*
Surr: Dibromofluoromethane	*101*		*71-125*	*%REC*	*1*	*15-Jun-2015 13:16*
Surr: Toluene-d8	*98.8*		*75-125*	*%REC*	*1*	*15-Jun-2015 13:16*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060423
Sample ID: EB060815 Lab ID:HS15060423-02
Collection Date: 08-Jun-2015 14:40 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES - SW8260C	**Method:SW8260**					Analyst: PC
Benzene	< 5.0		5.0	ug/L	1	15-Jun-2015 14:50
Surr: 1,2-Dichloroethane-d4	*98.7*		*70-125*	*%REC*	*1*	*15-Jun-2015 14:50*
Surr: 4-Bromofluorobenzene	*96.1*		*72-125*	*%REC*	*1*	*15-Jun-2015 14:50*
Surr: Dibromofluoromethane	*102*		*71-125*	*%REC*	*1*	*15-Jun-2015 14:50*
Surr: Toluene-d8	*99.0*		*75-125*	*%REC*	*1*	*15-Jun-2015 14:50*

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

'lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060423
Sample ID: FB060815 Lab ID:HS15060423-03
Collection Date: 08-Jun-2015 15:00 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES - SW8260C		**Method:SW8260**				Analyst: PC
Benzene	< 5.0		5.0	ug/L	1	15-Jun-2015 15:14
Surr: 1,2-Dichloroethane-d4	*95.1*		*70-125*	*%REC*	*1*	*15-Jun-2015 15:14*
Surr: 4-Bromofluorobenzene	*93.5*		*72-125*	*%REC*	*1*	*15-Jun-2015 15:14*
Surr: Dibromofluoromethane	*99.7*		*71-125*	*%REC*	*1*	*15-Jun-2015 15:14*
Surr: Toluene-d8	*98.7*		*75-125*	*%REC*	*1*	*15-Jun-2015 15:14*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060423

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R256157	**Test Name :** VOLATILES - SW8260C			**Matrix:** Water		
HS15060423-01	MW-10	08 Jun 2015 14:20			15 Jun 2015 13:16	1
HS15060423-02	EB060815	08 Jun 2015 14:40			15 Jun 2015 14:50	1
HS15060423-03	FB060815	08 Jun 2015 15:00			15 Jun 2015 15:14	1

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060423

QC BATCH REPORT

Batch ID: R256157 **Instrument:** VOA7 **Method:** SW8260

MBLK Sample ID: **VBLKW-150615** Units: **ug/L** Analysis Date: **15-Jun-2015 11:41**
Client ID: Run ID: **VOA7_256157** SeqNo: **3319458** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	< 5.0	5.0								
Surr: 1,2-Dichloroethane-d4	*47.16*	*0*	*50*	*0*	*94.3*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*46.87*	*0*	*50*	*0*	*93.7*	*72 - 125*				
Surr: Dibromofluoromethane	*50.16*	*0*	*50*	*0*	*100*	*71 - 125*				
Surr: Toluene-d8	*50.02*	*0*	*50*	*0*	*100*	*75 - 125*				

LCS Sample ID: **VLCSW-150615** Units: **ug/L** Analysis Date: **15-Jun-2015 14:27**
Client ID: Run ID: **VOA7_256157** SeqNo: **3319603** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	51.54	5.0	50	0	103	73 - 121				
Surr: 1,2-Dichloroethane-d4	*52.24*	*0*	*50*	*0*	*104*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*52.09*	*0*	*50*	*0*	*104*	*72 - 125*				
Surr: Dibromofluoromethane	*51.47*	*0*	*50*	*0*	*103*	*71 - 125*				
Surr: Toluene-d8	*49.4*	*0*	*50*	*0*	*98.8*	*75 - 125*				

MS Sample ID: **HS15060464-01MS** Units: **ug/L** Analysis Date: **15-Jun-2015 13:39**
Client ID: Run ID: **VOA7_256157** SeqNo: **3319600** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	49.18	5.0	50	0	98.4	73 - 121				
Surr: 1,2-Dichloroethane-d4	*50.28*	*0*	*50*	*0*	*101*	*70 - 125*				
Surr: 4-Bromofluorobenzene	*51.47*	*0*	*50*	*0*	*103*	*72 - 125*				
Surr: Dibromofluoromethane	*51.25*	*0*	*50*	*0*	*103*	*71 - 125*				
Surr: Toluene-d8	*49.06*	*0*	*50*	*0*	*98.1*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060423

QC BATCH REPORT

Batch ID: R256157 **Instrument: VOA7** **Method: SW8260**

MSD Sample ID: **HS15060464-01MSD** Units: **ug/L** Analysis Date: **15-Jun-2015 14:03**
Client ID: Run ID: **VOA7_256157** SeqNo: **3319601** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	49.16	5.0	50	0	98.3	73 - 121	49.18	0.0569	20	
Surr: 1,2-Dichloroethane-d4	*53.84*	*0*	*50*	*0*	*108*	*70 - 125*	*50.28*	*6.84*	*20*	
Surr: 4-Bromofluorobenzene	*52.42*	*0*	*50*	*0*	*105*	*72 - 125*	*51.47*	*1.82*	*20*	
Surr: Dibromofluoromethane	*52.46*	*0*	*50*	*0*	*105*	*71 - 125*	*51.25*	*2.33*	*20*	
Surr: Toluene-d8	*48.66*	*0*	*50*	*0*	*97.3*	*75 - 125*	*49.06*	*0.833*	*20*	

The following samples were anayzed in this batch: HS15060423-01 HS15060423-02 HS15060423-03

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: **HS15060423**

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

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Aug-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2014-128	31-Aug-2015
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060423

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15060423-01	MW-10	Login	6/9/2015 8:05:06 PM	CGG	VW-3
HS15060423-02	EB060815	Login	6/9/2015 8:05:06 PM	CGG	VW-3
HS15060423-03	FB060815	Login	6/9/2015 8:05:06 PM	CGG	VW-3

Sample Receipt Checklist

Client Name: Arcadis-Baton Rouge
Work Order: HS15060423

Date/Time Received: 09-Jun-2015 09:35
Received by: TTW

Checklist completed by: *Corey Grandits* eSignature 9-Jun-2015 Date

Reviewed by: *Dane J. Wacasey* eSignature 10-Jun-2015 Date

Matrices: Water

Carrier name: ALS Courier

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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
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):	2.2C/2.5C c/uc	4	
Cooler(s)/Kit(s):	Sm Red		
Date/Time sample(s) sent to storage:	06/09/2015 20:20		
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:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

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 1

COC ID: 128175

HS15060423

WV

ARCADIS U.S., Inc.

Brickland NM Semi Annual GW Sampling

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Brickland Refinery Huntsman	A	8260 Benzene (unpreserved)
Work Order		Project Number		B	8270 - PAH
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS U.S., Inc.	C	
Send Report To	Garett Ferguson	Invoice Attn		D	
Address	211 N Florence Street, Suite 202	Address	211 N Florence Street, Suite 202	E	
				F	
City/State/Zip	El Paso, TX 79901	City/State/Zip	El Paso, TX 79901	G	
Phone	(915) 533-3902	Phone	(915) 533-9025	H	
Fax		Fax	(915) 533-9045	I	
e-Mail Address	Garett.Ferguson@arcadis-us.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-10	060815	1420	W	None	3	X										
2	EB060815	060815	1440	W		3	X										
3	FB060815	060815	1500	W		3	X										
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☒ Std 10 WK days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other

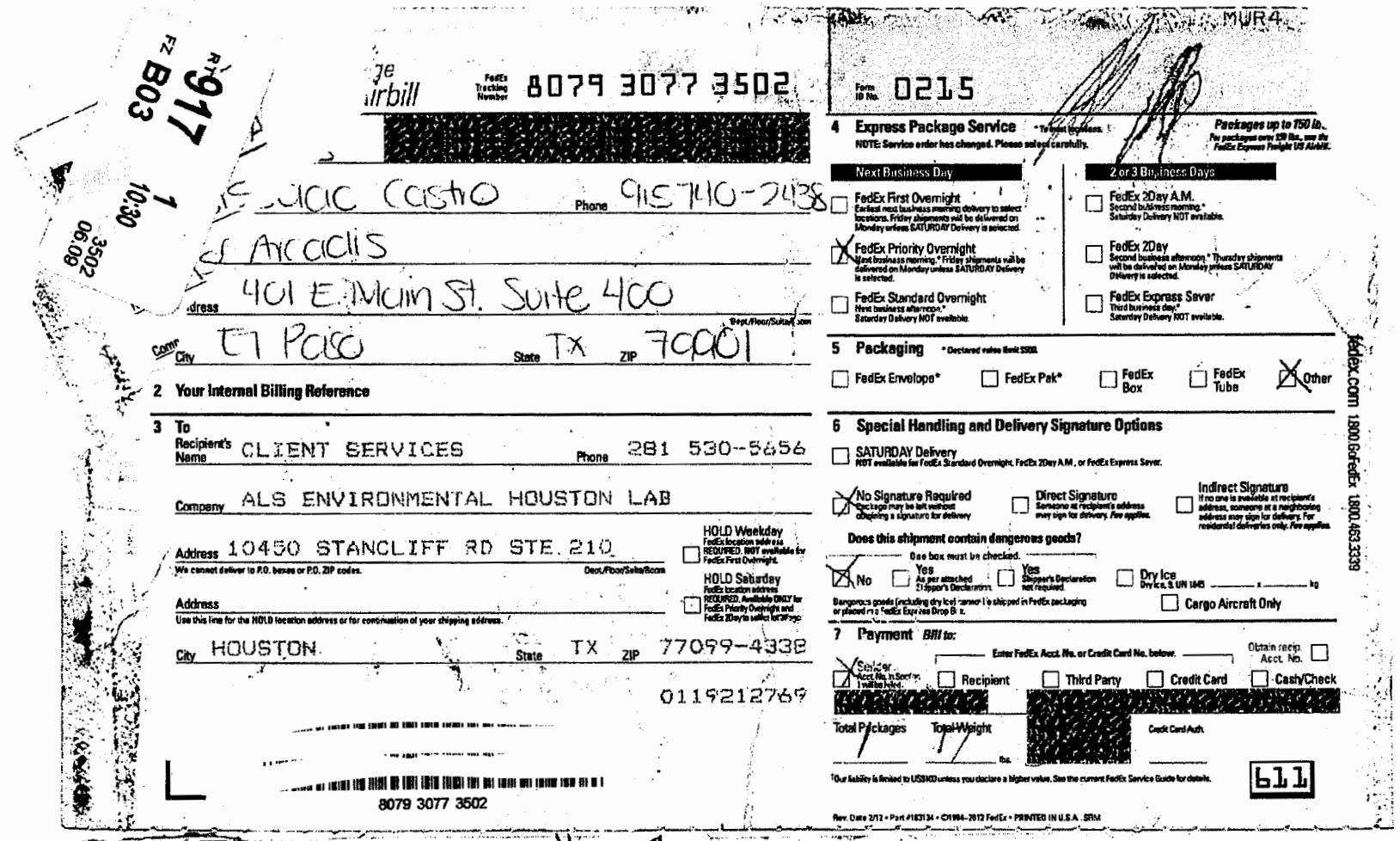
Results Due Date:

Relinquished by: Ana Gutierrez	Date: 060815	Time: 1520	Received by:	Notes:	
Relinquished by:	Date:	Time:	Received by (Laboratory): 6/9/15 9:35AM	Cooler ID	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	1	2.1/2.3
				2	2.1/2.3

QC Package: (Check One Box Below)
☒ Level 2 Std QC ☐ TRRP ChkList
☐ Level 3 Std QC/Raw da ☐ TRRP Level 4
☐ Level 4 SW846/CLP
☐ Other/EDD

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



FedEx Airbill — FedEx Tracking Number 8079 3077 3502

Form ID No. 0215

MUR4

Phone 915 740-2438

Arcadis

401 E. Main St. Suite 400

City El Paso State TX ZIP 79901

2 Your Internal Billing Reference

3 To

Recipient's Name CLIENT SERVICES Phone 281 530-5656

Company ALS ENVIRONMENTAL HOUSTON LAB

Address 10450 STANCLIFF RD STE. 210

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

Use this line for the HOLD location address or for continuation of your shipping address.

City HOUSTON State TX ZIP 77099-4338

0119212769

8079 3077 3502

4 Express Package Service

NOTE: Service order has changed. Please select carefully.

Packages up to 150 lb.

Next Business Day

- FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- FedEx Standard Overnight — First business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

- FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.

- FedEx Envelope*
- FedEx Pak*
- FedEx Box
- FedEx Tube
- [X] Other

6 Special Handling and Delivery Signature Options

- SATURDAY Delivery — NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
- [X] No Signature Required — Package may be left without obtaining a signature for delivery.
- Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
- Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

HOLD Weekday — FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday — FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods?

One box must be checked.

- [X] No
- Yes — As per attached Shipper's Declaration.
- Yes — Shipper's Declaration not required.
- Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

- [X] Sender — Acct. No. in Section 1 will be billed.
- Recipient
- Third Party
- Credit Card
- Cash/Check

Obtain recip. Acct. No.

Total Packages 1 Total Weight 1 lbs. Credit Card Auth.

†Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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FZ 803 RT 917 1 10:30 06.08 3502

Small RED

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

Date: 6-
Name:
Compan

CUSTODY SEAL

Time: 5:30

Arcadis

Seal Broken By:

Date: 6/9/15

ALS Environmental

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

August 17, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15060476**

Laboratory Results for: **Brickland NM Semi Annual Sampling Huntsman**

Dear Tim,

ALS Environmental received 8 sample(s) on Jun 10, 2015 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: Dane.Wacasey
Dane J. Wacasey

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060476

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15060476-01	MW-8	Water		09-Jun-2015 09:20	10-Jun-2015 09:12	☐
HS15060476-02	FD060915	Water		09-Jun-2015 00:00	10-Jun-2015 09:12	☐
HS15060476-03	EB060915	Water		09-Jun-2015 09:50	10-Jun-2015 09:12	☐
HS15060476-04	FB060915	Water		09-Jun-2015 09:40	10-Jun-2015 09:12	☐
HS15060476-05	MW-11	Water		09-Jun-2015 10:55	10-Jun-2015 09:12	☐
HS15060476-06	MW-5	Water		09-Jun-2015 13:15	10-Jun-2015 09:12	☐
HS15060476-07	MW-17	Water		09-Jun-2015 14:25	10-Jun-2015 09:12	☐
HS15060476-08	Trip Blank-052215-67	Water		09-Jun-2015 00:00	10-Jun-2015 09:12	☑

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060476

Work Order Comments

- This report was revised August 17, 2015 in order to report non-detects as a <PQL value and report results in µg/L units.

GCMS Semivolatiles by Method SW8270

Batch ID: 94226

Sample ID: **LCS-94226**
- Insufficient sample received to perform MS/MSD. LCS/LCSD provided as batch quality control.

GCMS Volatiles by Method SW8260

Batch ID: R256129

Sample ID: **HS15060320-02MS**
- MS and MSD are for an unrelated sample

Batch ID: R256174,R256249

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060476
Sample ID: MW-8 Lab ID:HS15060476-01
Collection Date: 09-Jun-2015 09:20 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS		**Method:SW8270**		Prep:SW3510 / 12-Jun-2015		Analyst: LG
Acenaphthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Acenaphthylene	**0.24**		**0.20**	**ug/L**	1	12-Jun-2015 15:09
Anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Benz(a)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Benzo(a)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Benzo(b)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Benzo(g,h,i)perylene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Benzo(k)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Chrysene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Dibenz(a,h)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Fluorene	**0.45**		**0.20**	**ug/L**	1	12-Jun-2015 15:09
Indeno(1,2,3-cd)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Naphthalene	**0.62**		**0.20**	**ug/L**	1	12-Jun-2015 15:09
Phenanthrene	**0.36**		**0.20**	**ug/L**	1	12-Jun-2015 15:09
Pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:09
Surr: 2-Fluorobiphenyl	*69.1*		*40-125*	*%REC*	*1*	*12-Jun-2015 15:09*
Surr: 4-Terphenyl-d14	*84.1*		*40-135*	*%REC*	*1*	*12-Jun-2015 15:09*
Surr: Nitrobenzene-d5	*55.5*		*41-120*	*%REC*	*1*	*12-Jun-2015 15:09*
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	**5,100**		**100**	**ug/L**	100	16-Jun-2015 14:37
Surr: 1,2-Dichloroethane-d4	*114*		*71-125*	*%REC*	*100*	*16-Jun-2015 14:37*
Surr: 4-Bromofluorobenzene	*98.9*		*70-125*	*%REC*	*100*	*16-Jun-2015 14:37*
Surr: Dibromofluoromethane	*113*		*74-125*	*%REC*	*100*	*16-Jun-2015 14:37*
Surr: Toluene-d8	*112*		*75-125*	*%REC*	*100*	*16-Jun-2015 14:37*

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

`lient:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual Sampling Huntsman	WorkOrder:HS15060476
Sample ID:	FD060915	Lab ID:HS15060476-02
Collection Date:	09-Jun-2015 00:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS	**Method:SW8270**			Prep:SW3510 / 12-Jun-2015		Analyst: LG
Acenaphthene	**0.23**		**0.20**	**ug/L**	1	12-Jun-2015 15:28
Acenaphthylene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Benz(a)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Benzo(a)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Benzo(b)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Benzo(g,h,i)perylene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Benzo(k)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Chrysene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Dibenz(a,h)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Fluorene	**0.33**		**0.20**	**ug/L**	1	12-Jun-2015 15:28
Indeno(1,2,3-cd)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Naphthalene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Phenanthrene	**0.30**		**0.20**	**ug/L**	1	12-Jun-2015 15:28
Pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:28
Surr: 2-Fluorobiphenyl	*77.8*		*40-125*	*%REC*	*1*	*12-Jun-2015 15:28*
Surr: 4-Terphenyl-d14	*78.1*		*40-135*	*%REC*	*1*	*12-Jun-2015 15:28*
Surr: Nitrobenzene-d5	*62.2*		*41-120*	*%REC*	*1*	*12-Jun-2015 15:28*

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

`lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060476
Sample ID: EB060915 Lab ID:HS15060476-03
Collection Date: 09-Jun-2015 09:50 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS	**Method:SW8270**			Prep:SW3510 / 12-Jun-2015		Analyst: LG
Acenaphthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Acenaphthylene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Benz(a)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Benzo(a)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Benzo(b)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Benzo(g,h,i)perylene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Benzo(k)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Chrysene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Dibenz(a,h)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Fluorene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Indeno(1,2,3-cd)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Naphthalene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
Phenanthrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
?yrene	< 0.20		0.20	ug/L	1	12-Jun-2015 15:47
ırr: 2-Fluorobiphenyl	*48.7*		*40-125*	*%REC*	*1*	*12-Jun-2015 15:47*
Surr: 4-Terphenyl-d14	*81.1*		*40-135*	*%REC*	*1*	*12-Jun-2015 15:47*
Surr: Nitrobenzene-d5	*56.7*		*41-120*	*%REC*	*1*	*12-Jun-2015 15:47*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060476
Sample ID: FB060915 Lab ID:HS15060476-04
Collection Date: 09-Jun-2015 09:40 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS	**Method:SW8270**			Prep:SW3510 / 12-Jun-2015		Analyst: LG
Acenaphthene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Acenaphthylene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Benz(a)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Benzo(a)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Benzo(b)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Benzo(g,h,i)perylene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Benzo(k)fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Chrysene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Dibenz(a,h)anthracene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Fluoranthene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Fluorene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Indeno(1,2,3-cd)pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Naphthalene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Phenanthrene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Pyrene	< 0.20		0.20	ug/L	1	12-Jun-2015 16:06
Surr: 2-Fluorobiphenyl	*66.5*		*40-125*	*%REC*	*1*	*12-Jun-2015 16:06*
Surr: 4-Terphenyl-d14	*86.3*		*40-135*	*%REC*	*1*	*12-Jun-2015 16:06*
Surr: Nitrobenzene-d5	*71.4*		*41-120*	*%REC*	*1*	*12-Jun-2015 16:06*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual Sampling Huntsman	WorkOrder:HS15060476
Sample ID:	MW-11	Lab ID:HS15060476-05
Collection Date:	09-Jun-2015 10:55	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: KMB
Benzene	**1.3**		**1.0**	**ug/L**	**1**	13-Jun-2015 17:56
Surr: 1,2-Dichloroethane-d4	*107*		*71-125*	*%REC*	*1*	*13-Jun-2015 17:56*
Surr: 4-Bromofluorobenzene	*102*		*70-125*	*%REC*	*1*	*13-Jun-2015 17:56*
Surr: Dibromofluoromethane	*111*		*74-125*	*%REC*	*1*	*13-Jun-2015 17:56*
Surr: Toluene-d8	*112*		*75-125*	*%REC*	*1*	*13-Jun-2015 17:56*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060476
Sample ID: MW-5 Lab ID:HS15060476-06
Collection Date: 09-Jun-2015 13:15 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	**1,900**		**10**	**ug/L**	10	15-Jun-2015 16:51
Surr: 1,2-Dichloroethane-d4	*102*		*71-125*	*%REC*	*10*	*15-Jun-2015 16:51*
Surr: 4-Bromofluorobenzene	*101*		*70-125*	*%REC*	*10*	*15-Jun-2015 16:51*
Surr: Dibromofluoromethane	*108*		*74-125*	*%REC*	*10*	*15-Jun-2015 16:51*
Surr: Toluene-d8	*112*		*75-125*	*%REC*	*10*	*15-Jun-2015 16:51*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual Sampling Huntsman	WorkOrder:HS15060476
Sample ID:	MW-17	Lab ID:HS15060476-07
Collection Date:	09-Jun-2015 14:25	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	15-Jun-2015 20:46
Surr: 1,2-Dichloroethane-d4	*108*		*71-125*	*%REC*	*1*	*15-Jun-2015 20:46*
Surr: 4-Bromofluorobenzene	*104*		*70-125*	*%REC*	*1*	*15-Jun-2015 20:46*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*1*	*15-Jun-2015 20:46*
Surr: Toluene-d8	*114*		*75-125*	*%REC*	*1*	*15-Jun-2015 20:46*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 94226	**Test Name :** LOW-LEVEL PAHS			**Matrix:** Water		
HS15060476-01	MW-8	09 Jun 2015 09:20		12 Jun 2015 10:36	12 Jun 2015 15:09	1
HS15060476-02	FD060915	09 Jun 2015 00:00		12 Jun 2015 10:36	12 Jun 2015 15:28	1
HS15060476-03	EB060915	09 Jun 2015 09:50		12 Jun 2015 10:36	12 Jun 2015 15:47	1
HS15060476-04	FB060915	09 Jun 2015 09:40		12 Jun 2015 10:36	12 Jun 2015 16:06	1
Batch ID R256129	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060476-05	MW-11	09 Jun 2015 10:55			13 Jun 2015 17:56	1
Batch ID R256174	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060476-06	MW-5	09 Jun 2015 13:15			15 Jun 2015 16:51	10
HS15060476-07	MW-17	09 Jun 2015 14:25			15 Jun 2015 20:46	1
Batch ID R256249	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060476-01	MW-8	09 Jun 2015 09:20			16 Jun 2015 14:37	100

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: 94226 **Instrument: SV-7** **Method: SW8270**

MBLK Sample ID: **MBLK-94226** Units: **ug/L** Analysis Date: **15-Jun-2015 15:45**
Client ID: Run ID: **SV-7_256178** SeqNo: **3320049** PrepDate: **12-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.10	0.10								
Acenaphthylene	< 0.10	0.10								
Anthracene	< 0.10	0.10								
Benz(a)anthracene	< 0.10	0.10								
Benzo(a)pyrene	< 0.10	0.10								
Benzo(b)fluoranthene	< 0.10	0.10								
Benzo(g,h,i)perylene	< 0.10	0.10								
Benzo(k)fluoranthene	< 0.10	0.10								
Chrysene	< 0.10	0.10								
Dibenz(a,h)anthracene	< 0.10	0.10								
Fluoranthene	< 0.10	0.10								
Fluorene	< 0.10	0.10								
Indeno(1,2,3-cd)pyrene	< 0.10	0.10								
Naphthalene	< 0.10	0.10								
Phenanthrene	< 0.10	0.10								
Pyrene	< 0.10	0.10								
Surr: 2-Fluorobiphenyl	*3.248*	*0.20*	*5*	*0*	*65.0*	*40 - 125*				
Surr: 4-Terphenyl-d14	*4.121*	*0.20*	*5*	*0*	*82.4*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.653*	*0.20*	*5*	*0*	*73.1*	*41 - 120*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: 94226 **Instrument: SV-7** **Method: SW8270**

LCS Sample ID: **LCS-94226** Units: **ug/L** Analysis Date: **12-Jun-2015 13:12**
Client ID: Run ID: **SV-7_256178** SeqNo: **3320037** PrepDate: **12-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.592	0.10	5	0	71.8	45 - 120				
Acenaphthylene	3.869	0.10	5	0	77.4	47 - 120				
Anthracene	3.718	0.10	5	0	74.4	45 - 120				
Benz(a)anthracene	3.747	0.10	5	0	74.9	40 - 120				
Benzo(a)pyrene	4.126	0.10	5	0	82.5	45 - 120				
Benzo(b)fluoranthene	4.26	0.10	5	0	85.2	50 - 120				
Benzo(g,h,i)perylene	4.248	0.10	5	0	85.0	42 - 127				
Benzo(k)fluoranthene	3.997	0.10	5	0	79.9	45 - 127				
Chrysene	3.799	0.10	5	0	76.0	43 - 120				
Dibenz(a,h)anthracene	4.261	0.10	5	0	85.2	45 - 125				
Fluoranthene	3.875	0.10	5	0	77.5	45 - 125				
Fluorene	3.743	0.10	5	0	74.9	49 - 120				
Indeno(1,2,3-cd)pyrene	4.703	0.10	5	0	94.1	41 - 128				
Naphthalene	3.715	0.10	5	0	74.3	45 - 120				
Phenanthrene	3.724	0.10	5	0	74.5	45 - 121				
Pyrene	3.98	0.10	5	0	79.6	40 - 130				
Surr: 2-Fluorobiphenyl	*3.628*	*0.20*	*5*	*0*	*72.6*	*40 - 125*				
Surr: 4-Terphenyl-d14	*3.644*	*0.20*	*5*	*0*	*72.9*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.757*	*0.20*	*5*	*0*	*75.1*	*41 - 120*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: 94226 **Instrument: SV-7** **Method: SW8270**

LCSD Sample ID: **LCSD-94226** Units: **ug/L** Analysis Date: **12-Jun-2015 13:31**
Client ID: Run ID: **SV-7_256178** SeqNo: **3320038** PrepDate: **12-Jun-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Acenaphthene	3.779	0.10	5	0	75.6	45 - 120	3.592	5.08	20	
Acenaphthylene	4.11	0.10	5	0	82.2	47 - 120	3.869	6.05	20	
Anthracene	4.055	0.10	5	0	81.1	45 - 120	3.718	8.66	20	
Benz(a)anthracene	4.252	0.10	5	0	85.0	40 - 120	3.747	12.6	20	
Benzo(a)pyrene	4.318	0.10	5	0	86.4	45 - 120	4.126	4.54	20	
Benzo(b)fluoranthene	4.679	0.10	5	0	93.6	50 - 120	4.26	9.37	20	
Benzo(g,h,i)perylene	4.305	0.10	5	0	86.1	42 - 127	4.248	1.34	20	
Benzo(k)fluoranthene	3.945	0.10	5	0	78.9	45 - 127	3.997	1.31	20	
Chrysene	4.044	0.10	5	0	80.9	43 - 120	3.799	6.23	20	
Dibenz(a,h)anthracene	4.487	0.10	5	0	89.7	45 - 125	4.261	5.17	20	
Fluoranthene	4.22	0.10	5	0	84.4	45 - 125	3.875	8.52	20	
Fluorene	3.959	0.10	5	0	79.2	49 - 120	3.743	5.62	20	
Indeno(1,2,3-cd)pyrene	4.611	0.10	5	0	92.2	41 - 128	4.703	1.97	20	
Naphthalene	3.846	0.10	5	0	76.9	45 - 120	3.715	3.48	20	
Phenanthrene	4.02	0.10	5	0	80.4	45 - 121	3.724	7.66	20	
Pyrene	4.349	0.10	5	0	87.0	40 - 130	3.98	8.87	20	
Surr: 2-Fluorobiphenyl	*3.788*	*0.20*	*5*	*0*	*75.8*	*40 - 125*	*3.628*	*4.31*		
Surr: 4-Terphenyl-d14	*4.049*	*0.20*	*5*	*0*	*81.0*	*40 - 135*	*3.644*	*10.5*		
Surr: Nitrobenzene-d5	*4.007*	*0.20*	*5*	*0*	*80.1*	*41 - 120*	*3.757*	*6.44*		

The following samples were anayzed in this batch: HS15060476-01 HS15060476-02 HS15060476-03 HS15060476-04

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: R256129 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-150613** Units: **ug/L** Analysis Date: **13-Jun-2015 13:11**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319331** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*52.22*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*53.14*	*1.0*	*50*	*0*	*106*	*70 - 125*				
Surr: Dibromofluoromethane	*54.91*	*1.0*	*50*	*0*	*110*	*74 - 125*				
Surr: Toluene-d8	*58.96*	*1.0*	*50*	*0*	*118*	*75 - 125*				

LCS Sample ID: **VLCSW-150613** Units: **ug/L** Analysis Date: **13-Jun-2015 11:43**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319330** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.67	1.0	50	0	99.3	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.13*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*53.42*	*1.0*	*50*	*0*	*107*	*70 - 125*				
Surr: Dibromofluoromethane	*56.73*	*1.0*	*50*	*0*	*113*	*74 - 125*				
Surr: Toluene-d8	*56.87*	*1.0*	*50*	*0*	*114*	*75 - 125*				

MS Sample ID: **HS15060320-02MS** Units: **ug/L** Analysis Date: **13-Jun-2015 15:51**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	32.27	1.0	50	0	64.5	80 - 120				S
Surr: 1,2-Dichloroethane-d4	*52.91*	*1.0*	*50*	*0*	*106*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.74*	*1.0*	*50*	*0*	*105*	*70 - 125*				
Surr: Dibromofluoromethane	*55.93*	*1.0*	*50*	*0*	*112*	*74 - 125*				
Surr: Toluene-d8	*56.12*	*1.0*	*50*	*0*	*112*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: R256129 **Instrument:** VOA4 **Method:** SW8260

MSD Sample ID: **HS15060320-02MSD** Units: **ug/L** Analysis Date: **13-Jun-2015 16:16**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319337** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	27.32	1.0	50	0	54.6	80 - 120	32.27	16.6	20	S
Surr: 1,2-Dichloroethane-d4	*51.47*	*1.0*	*50*	*0*	*103*	*71 - 125*	*52.91*	*2.78*	*20*	
Surr: 4-Bromofluorobenzene	*54.55*	*1.0*	*50*	*0*	*109*	*70 - 125*	*52.74*	*3.38*	*20*	
Surr: Dibromofluoromethane	*55.69*	*1.0*	*50*	*0*	*111*	*74 - 125*	*55.93*	*0.432*	*20*	
Surr: Toluene-d8	*57.3*	*1.0*	*50*	*0*	*115*	*75 - 125*	*56.12*	*2.07*	*20*	

The following samples were anayzed in this batch: HS15060476-05

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: R256174 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-150615** Units: **ug/L** Analysis Date: **15-Jun-2015 11:11**
Client ID: Run ID: **VOA4_256174** SeqNo: **3319937** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*59.25*	*1.0*	*50*	*0*	*119*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*53.94*	*1.0*	*50*	*0*	*108*	*70 - 125*				
Surr: Dibromofluoromethane	*61.16*	*1.0*	*50*	*0*	*122*	*74 - 125*				
Surr: Toluene-d8	*60.9*	*1.0*	*50*	*0*	*122*	*75 - 125*				

LCS Sample ID: **VLCSW-150615** Units: **ug/L** Analysis Date: **15-Jun-2015 10:20**
Client ID: Run ID: **VOA4_256174** SeqNo: **3319936** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	52.08	1.0	50	0	104	80 - 120				
Surr: 1,2-Dichloroethane-d4	*53.01*	*1.0*	*50*	*0*	*106*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*54.39*	*1.0*	*50*	*0*	*109*	*70 - 125*				
Surr: Dibromofluoromethane	*56.21*	*1.0*	*50*	*0*	*112*	*74 - 125*				
Surr: Toluene-d8	*57.44*	*1.0*	*50*	*0*	*115*	*75 - 125*				

MS Sample ID: **HS15060131-07MS** Units: **ug/L** Analysis Date: **15-Jun-2015 12:53**
Client ID: Run ID: **VOA4_256174** SeqNo: **3319941** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1279	25	1250	0	102	80 - 120				
Surr: 1,2-Dichloroethane-d4	*1282*	*25*	*1250*	*0*	*103*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*1356*	*25*	*1250*	*0*	*108*	*70 - 125*				
Surr: Dibromofluoromethane	*1375*	*25*	*1250*	*0*	*110*	*74 - 125*				
Surr: Toluene-d8	*1411*	*25*	*1250*	*0*	*113*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: R256174 **Instrument: VOA4** **Method: SW8260**

MSD Sample ID: **HS15060131-07MSD** Units: **ug/L** Analysis Date: **15-Jun-2015 13:19**
Client ID: Run ID: **VOA4_256174** SeqNo: **3319942** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1281	25	1250	0	102	80 - 120	1279	0.136	20	
Surr: 1,2-Dichloroethane-d4	*1307*	*25*	*1250*	*0*	*105*	*71 - 125*	*1282*	*1.89*	*20*	
Surr: 4-Bromofluorobenzene	*1346*	*25*	*1250*	*0*	*108*	*70 - 125*	*1356*	*0.739*	*20*	
Surr: Dibromofluoromethane	*1393*	*25*	*1250*	*0*	*111*	*74 - 125*	*1375*	*1.31*	*20*	
Surr: Toluene-d8	*1416*	*25*	*1250*	*0*	*113*	*75 - 125*	*1411*	*0.338*	*20*	

The following samples were anayzed in this batch: HS15060476-06 HS15060476-07

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: R256249 **Instrument:** VOA4 **Method:** SW8260

MBLK Sample ID: **VBLKW-150616** Units: **ug/L** Analysis Date: **16-Jun-2015 11:11**
Client ID: Run ID: **VOA4_256249** SeqNo: **3321528** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*57.65*	*1.0*	*50*	*0*	*115*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*43.09*	*1.0*	*50*	*0*	*86.2*	*70 - 125*				
Surr: Dibromofluoromethane	*57.27*	*1.0*	*50*	*0*	*115*	*74 - 125*				
Surr: Toluene-d8	*49.36*	*1.0*	*50*	*0*	*98.7*	*75 - 125*				

LCS Sample ID: **VLCSW-150616** Units: **ug/L** Analysis Date: **16-Jun-2015 10:20**
Client ID: Run ID: **VOA4_256249** SeqNo: **3321527** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.55	1.0	50	0	103	80 - 120				
Surr: 1,2-Dichloroethane-d4	*50.91*	*1.0*	*50*	*0*	*102*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.2*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*54.48*	*1.0*	*50*	*0*	*109*	*74 - 125*				
Surr: Toluene-d8	*54*	*1.0*	*50*	*0*	*108*	*75 - 125*				

MS Sample ID: **HS15060131-05MS** Units: **ug/L** Analysis Date: **16-Jun-2015 12:03**
Client ID: Run ID: **VOA4_256249** SeqNo: **3321530** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1245	25	1250	189.1	84.5	80 - 120				
Surr: 1,2-Dichloroethane-d4	*1418*	*25*	*1250*	*0*	*113*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*1290*	*25*	*1250*	*0*	*103*	*70 - 125*				
Surr: Dibromofluoromethane	*1487*	*25*	*1250*	*0*	*119*	*74 - 125*				
Surr: Toluene-d8	*1368*	*25*	*1250*	*0*	*109*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

QC BATCH REPORT

Batch ID: R256249 **Instrument: VOA4** **Method: SW8260**

MSD Sample ID: **HS15060131-05MSD** Units: **ug/L** Analysis Date: **16-Jun-2015 12:29**
Client ID: Run ID: **VOA4_256249** SeqNo: **3321531** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1380	25	1250	189.1	95.3	80 - 120	1245	10.3	20	
Surr: 1,2-Dichloroethane-d4	*1422*	*25*	*1250*	*0*	*114*	*71 - 125*	*1418*	*0.291*	*20*	
Surr: 4-Bromofluorobenzene	*1316*	*25*	*1250*	*0*	*105*	*70 - 125*	*1290*	*1.99*	*20*	
Surr: Dibromofluoromethane	*1429*	*25*	*1250*	*0*	*114*	*74 - 125*	*1487*	*3.94*	*20*	
Surr: Toluene-d8	*1506*	*25*	*1250*	*0*	*120*	*75 - 125*	*1368*	*9.58*	*20*	

The following samples were anayzed in this batch: HS15060476-01

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060476

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Aug-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2014-128	31-Aug-2015
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060476

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15060476-01	MW-8	Login	6/10/2015 8:16:21 PM	BHH	8C
HS15060476-01	MW-8	Login	6/10/2015 8:16:21 PM	BHH	VW-3
HS15060476-02	FD060915	Login	6/10/2015 8:16:21 PM	BHH	8C
HS15060476-03	EB060915	Login	6/10/2015 8:16:21 PM	BHH	8C
HS15060476-04	FB060915	Login	6/10/2015 8:16:21 PM	BHH	8C
HS15060476-05	MW-11	Login	6/10/2015 8:16:21 PM	BHH	VW-3
HS15060476-06	MW-5	Login	6/10/2015 8:16:21 PM	BHH	VW-3
HS15060476-07	MW-17	Login	6/10/2015 8:16:21 PM	BHH	VW-3
HS15060476-08	Trip Blank-052215-67	Login	6/10/2015 8:23:11 PM	BHH	VW-3

Sample Receipt Checklist

Client Name: Arcadis-Baton Rouge
Work Order: HS15060476
Date/Time Received: 10-Jun-2015 09:12
Received by: LOT

Checklist completed by: *Baudelio Hernandez* eSignature 10-Jun-2015 Date
Reviewed by: *Dane J. Wacasey* eSignature 12-Jun-2015 Date

Matrices: Water
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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
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):	1.7c / 2.0c c/uc	IR#4	
Cooler(s)/Kit(s):	23879		
Date/Time sample(s) sent to storage:	06/10/2015 20:20		
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:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

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 1

COC ID: 128174

HS15060476

ARCADIS U.S., Inc.
Brickland Refinery Huntsman

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Brickland Refinery Huntsman	A	8260 Benzene (unpreserved)
Work Order		Project Number		B	8270 - PAH
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS U.S., Inc.	G	
Send Report To	Garett Ferguson	Invoice Attn		D	
Address	211 N Florence Street, Suite 202	Address	211 N Florence Street, Suite 202	E	
				F	
City/State/Zip	El Paso, TX 79901	City/State/Zip	El Paso, TX 79901	G	
Phone	(915) 533-3902	Phone	(915) 533-9025	H	
Fax		Fax	(915) 533-9045	I	
e-Mail Address	Garett.Ferguson@arcadis-us.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-8	060915	0920	W	None	5	X	X									
2	FD060915		—			2		X									
3	EB060915		0950			2		X									
4	FB060915		0940			2		X									
5	MW-11		1055			3	X										
6	MW-5		1315			3	X										
7	MW-17	↓	1425	↓	↓	3	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

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: Ana Gutierrez Date: 060915 Time: 1530 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 6-16-15 9:12 pm

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

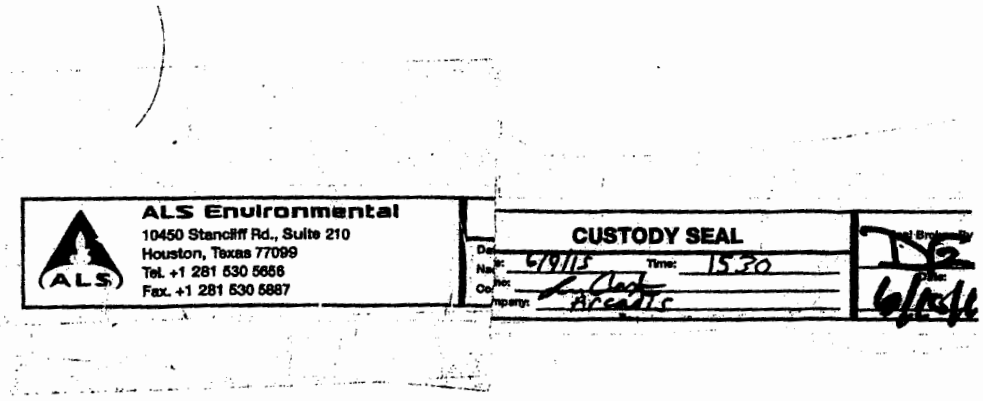
Notes:

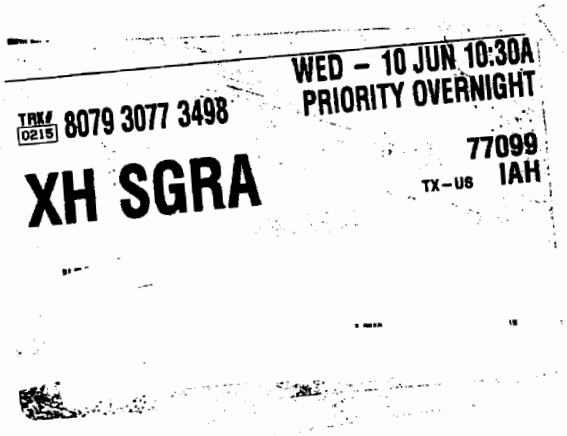
Cooler ID	Cooler Temp.
	1.7/0.3

QC Package: (Check One Box Below)
[X] Level 2 Std QC
[ ] Level 3 Std QC/Raw da
[ ] Level 4 SW846/CLP
[ ] Other/EDD
[ ] TRRP ChkList
[ ] TRRP Level 4

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 in


ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
ALS
CUSTODY SEAL
Time: 1530


TRK# 0215 8079 3077 3498
WED – 10 JUN 10:30A
PRIORITY OVERNIGHT
XH SGRA
77099
TX-US IAH

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

August 17, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15060509**

Laboratory Results for: **Brickland NM Semi Annual Sampling Huntsman**

Dear Tim,

ALS Environmental received 9 sample(s) on Jun 11, 2015 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: Dane.Wacasey
Dane J. Wacasey

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060509

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15060509-01	MW-3S	Water		10-Jun-2015 08:50	11-Jun-2015 08:15	☐
HS15060509-02	MW-3D	Water		10-Jun-2015 09:50	11-Jun-2015 08:15	☐
HS15060509-03	MW-9S	Water		10-Jun-2015 10:45	11-Jun-2015 08:15	☐
HS15060509-04	MW-6S	Water		10-Jun-2015 12:45	11-Jun-2015 08:15	☐
HS15060509-05	FD061015	Water		10-Jun-2015 00:00	11-Jun-2015 08:15	☐
HS15060509-06	MW-6D	Water		10-Jun-2015 13:40	11-Jun-2015 08:15	☐
HS15060509-07	FB061015	Water		10-Jun-2015 13:55	11-Jun-2015 08:15	☐
HS15060509-08	EB061015	Water		10-Jun-2015 14:00	11-Jun-2015 08:15	☐
HS15060509-09	TB-052215-66	Water		10-Jun-2015 15:00	11-Jun-2015 08:15	☑

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060509

Work Order Comments

- This report was revised August 17, 2015 in order to report non-detects as a <PQL value and report results in µg/L units.

GCMS Volatiles by Method SW8260

Batch ID: R256129

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual Sampling Huntsman	WorkOrder:HS15060509
Sample ID:	MW-3S	Lab ID:HS15060509-01
Collection Date:	10-Jun-2015 08:50	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: KMB
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 19:12
Surr: 1,2-Dichloroethane-d4	*104*		*71-125*	*%REC*	*1*	*13-Jun-2015 19:12*
Surr: 4-Bromofluorobenzene	*103*		*70-125*	*%REC*	*1*	*13-Jun-2015 19:12*
Surr: Dibromofluoromethane	*113*		*74-125*	*%REC*	*1*	*13-Jun-2015 19:12*
Surr: Toluene-d8	*113*		*75-125*	*%REC*	*1*	*13-Jun-2015 19:12*

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

'lient: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Sample ID: MW-3D
Collection Date: 10-Jun-2015 09:50

ANALYTICAL REPORT
WorkOrder:HS15060509
Lab ID:HS15060509-02
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: KMB
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 20:53
Surr: 1,2-Dichloroethane-d4	*106*		*71-125*	*%REC*	*1*	*13-Jun-2015 20:53*
Surr: 4-Bromofluorobenzene	*103*		*70-125*	*%REC*	*1*	*13-Jun-2015 20:53*
Surr: Dibromofluoromethane	*111*		*74-125*	*%REC*	*1*	*13-Jun-2015 20:53*
Surr: Toluene-d8	*115*		*75-125*	*%REC*	*1*	*13-Jun-2015 20:53*

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

lient: ARCADIS U.S., Inc.
ANALYTICAL REPORT
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder:HS15060509
Sample ID: MW-9S
Lab ID:HS15060509-03
Collection Date: 10-Jun-2015 10:45
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: KMB**
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 21:18
Surr: 1,2-Dichloroethane-d4	*103*		*71-125*	*%REC*	*1*	*13-Jun-2015 21:18*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*1*	*13-Jun-2015 21:18*
Surr: Dibromofluoromethane	*113*		*74-125*	*%REC*	*1*	*13-Jun-2015 21:18*
Surr: Toluene-d8	*113*		*75-125*	*%REC*	*1*	*13-Jun-2015 21:18*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickland NM Semi Annual Sampling Huntsman WorkOrder:HS15060509
Sample ID: MW-6S Lab ID:HS15060509-04
Collection Date: 10-Jun-2015 12:45 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: KMB**
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 22:09
Surr: 1,2-Dichloroethane-d4	*108*		*71-125*	*%REC*	*1*	*13-Jun-2015 22:09*
Surr: 4-Bromofluorobenzene	*103*		*70-125*	*%REC*	*1*	*13-Jun-2015 22:09*
Surr: Dibromofluoromethane	*113*		*74-125*	*%REC*	*1*	*13-Jun-2015 22:09*
Surr: Toluene-d8	*119*		*75-125*	*%REC*	*1*	*13-Jun-2015 22:09*

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

ient: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Sample ID: FD061015
Collection Date: 10-Jun-2015 00:00

ANALYTICAL REPORT
WorkOrder:HS15060509
Lab ID:HS15060509-05
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: KMB**
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 22:35
Surr: 1,2-Dichloroethane-d4	*103*		*71-125*	*%REC*	*1*	*13-Jun-2015 22:35*
Surr: 4-Bromofluorobenzene	*102*		*70-125*	*%REC*	*1*	*13-Jun-2015 22:35*
Surr: Dibromofluoromethane	*113*		*74-125*	*%REC*	*1*	*13-Jun-2015 22:35*
Surr: Toluene-d8	*112*		*75-125*	*%REC*	*1*	*13-Jun-2015 22:35*

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

lient: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Sample ID: MW-6D
Collection Date: 10-Jun-2015 13:40

ANALYTICAL REPORT
WorkOrder:HS15060509
Lab ID:HS15060509-06
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: KMB**
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 21:44
Surr: 1,2-Dichloroethane-d4	*107*		*71-125*	*%REC*	*1*	*13-Jun-2015 21:44*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*1*	*13-Jun-2015 21:44*
Surr: Dibromofluoromethane	*109*		*74-125*	*%REC*	*1*	*13-Jun-2015 21:44*
Surr: Toluene-d8	*117*		*75-125*	*%REC*	*1*	*13-Jun-2015 21:44*

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

`lient:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
⁄roject:	Brickland NM Semi Annual Sampling Huntsman	WorkOrder:HS15060509
Sample ID:	FB061015	Lab ID:HS15060509-07
Collection Date:	10-Jun-2015 13:55	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: KMB
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 20:02
Surr: 1,2-Dichloroethane-d4	*105*		*71-125*	*%REC*	*1*	*13-Jun-2015 20:02*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*1*	*13-Jun-2015 20:02*
Surr: Dibromofluoromethane	*110*		*74-125*	*%REC*	*1*	*13-Jun-2015 20:02*
Surr: Toluene-d8	*116*		*75-125*	*%REC*	*1*	*13-Jun-2015 20:02*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual Sampling Huntsman	WorkOrder:HS15060509
Sample ID:	EB061015	Lab ID:HS15060509-08
Collection Date:	10-Jun-2015 14:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				**Analyst: KMB**
Benzene	< 1.0		1.0	ug/L	1	13-Jun-2015 20:28
Surr: 1,2-Dichloroethane-d4	*104*		*71-125*	*%REC*	*1*	*13-Jun-2015 20:28*
Surr: 4-Bromofluorobenzene	*106*		*70-125*	*%REC*	*1*	*13-Jun-2015 20:28*
Surr: Dibromofluoromethane	*111*		*74-125*	*%REC*	*1*	*13-Jun-2015 20:28*
Surr: Toluene-d8	*116*		*75-125*	*%REC*	*1*	*13-Jun-2015 20:28*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060509

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R256129	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15060509-01	MW-3S	10 Jun 2015 08:50			13 Jun 2015 19:12	1
HS15060509-02	MW-3D	10 Jun 2015 09:50			13 Jun 2015 20:53	1
HS15060509-03	MW-9S	10 Jun 2015 10:45			13 Jun 2015 21:18	1
HS15060509-04	MW-6S	10 Jun 2015 12:45			13 Jun 2015 22:09	1
HS15060509-05	FD061015	10 Jun 2015 00:00			13 Jun 2015 22:35	1
HS15060509-06	MW-6D	10 Jun 2015 13:40			13 Jun 2015 21:44	1
HS15060509-07	FB061015	10 Jun 2015 13:55			13 Jun 2015 20:02	1
HS15060509-08	EB061015	10 Jun 2015 14:00			13 Jun 2015 20:28	1

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060509

QC BATCH REPORT

Batch ID: R256129 **Instrument: VOA4** **Method: SW8260**

MBLK Sample ID: **VBLKW-150613** Units: **ug/L** Analysis Date: **13-Jun-2015 13:11**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319331** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*52.22*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*53.14*	*1.0*	*50*	*0*	*106*	*70 - 125*				
Surr: Dibromofluoromethane	*54.91*	*1.0*	*50*	*0*	*110*	*74 - 125*				
Surr: Toluene-d8	*58.96*	*1.0*	*50*	*0*	*118*	*75 - 125*				

LCS Sample ID: **VLCSW-150613** Units: **ug/L** Analysis Date: **13-Jun-2015 11:43**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319330** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	49.67	1.0	50	0	99.3	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.13*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*53.42*	*1.0*	*50*	*0*	*107*	*70 - 125*				
Surr: Dibromofluoromethane	*56.73*	*1.0*	*50*	*0*	*113*	*74 - 125*				
Surr: Toluene-d8	*56.87*	*1.0*	*50*	*0*	*114*	*75 - 125*				

MS Sample ID: **HS15060320-02MS** Units: **ug/L** Analysis Date: **13-Jun-2015 15:51**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319336** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	32.27	1.0	50	0	64.5	80 - 120				S
Surr: 1,2-Dichloroethane-d4	*52.91*	*1.0*	*50*	*0*	*106*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.74*	*1.0*	*50*	*0*	*105*	*70 - 125*				
Surr: Dibromofluoromethane	*55.93*	*1.0*	*50*	*0*	*112*	*74 - 125*				
Surr: Toluene-d8	*56.12*	*1.0*	*50*	*0*	*112*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: HS15060509

QC BATCH REPORT

Batch ID: R256129 **Instrument:** VOA4 **Method:** SW8260

MSD Sample ID: **HS15060320-02MSD** Units: **ug/L** Analysis Date: **13-Jun-2015 16:16**
Client ID: Run ID: **VOA4_256129** SeqNo: **3319337** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	27.32	1.0	50	0	54.6	80 - 120	32.27	16.6	20	S
Surr: 1,2-Dichloroethane-d4	*51.47*	*1.0*	*50*	*0*	*103*	*71 - 125*	*52.91*	*2.78*	*20*	
Surr: 4-Bromofluorobenzene	*54.55*	*1.0*	*50*	*0*	*109*	*70 - 125*	*52.74*	*3.38*	*20*	
Surr: Dibromofluoromethane	*55.69*	*1.0*	*50*	*0*	*111*	*74 - 125*	*55.93*	*0.432*	*20*	
Surr: Toluene-d8	*57.3*	*1.0*	*50*	*0*	*115*	*75 - 125*	*56.12*	*2.07*	*20*	

The following samples were anayzed in this batch: HS15060509-01 HS15060509-02 HS15060509-03 HS15060509-04 HS15060509-05 HS15060509-06 HS15060509-07 HS15060509-08

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
WorkOrder: **HS15060509**

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Aug-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2014-128	31-Aug-2015
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual Sampling Huntsman
Work Order: HS15060509

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15060509-01	MW-3S	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-02	MW-3D	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-03	MW-9S	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-04	MW-6S	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-05	FD061015	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-06	MW-6D	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-07	FB061015	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-08	EB061015	Login	6/11/2015 1:53:20 PM	CGG	VW-3
HS15060509-09	TB-052215-66	Login	6/11/2015 1:53:20 PM	CGG	VW-3

Sample Receipt Checklist

Client Name: Arcadis-Baton Rouge
Work Order: HS15060509

Date/Time Received: 11-Jun-2015 08:15
Received by: LQT

Checklist completed by: *Corey Grandits* eSignature 11-Jun-2015 Date

Reviewed by: *Dane J. Wacasey* eSignature 15-Jun-2015 Date

Matrices: 24327

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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
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):	0.1C/0.6C c/uc	5	
Cooler(s)/Kit(s):	24327		
Date/Time sample(s) sent to storage:	06/11/2015 14:14		
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: FD061018 no sample time on any vials

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Everett, WA +1 425 356 2600 | Fort Collins, CO +1 970 490 1511 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 115755

HS15060509

WV

ARCADIS U.S., Inc.

AG Huntsman

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	~~AT002100.2013.MOB02~~ AG	Project Name	~~Ft Bliss Landfill~~ AG Huntsman	A	~~Landfill Metals~~ AG 8260 benzene (unpres.)
Work Order		Project Number	~~AT002100.2013.MOB02~~ AG	B	~~Moisture %~~ AG 8270 - PAH
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	~~SPLP Gentingency~~ AG
Send Report To	Garrett Ferguson	Invoice Attn	Accounts Payable	D	
Address	401 East Main Street, Suite 400	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	El Paso, TX 79901	City/State/Zip	Highlands Ranch	G	
Phone	(915) 533-3902	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address	Garett.Ferguson@arcadis-us.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-3S	061015	0850	W	None	3	X										
2	MW-3D	061015	0950	W	None	3	X										
3	MW-9S	061015	1045	W	None	3	X										
4	MW-6S	061015	1245	W	None	3	X										
5	FD061015	061015	—	W	None	3	X										
6	MW-6D	061015	1340	W	None	3	X										
7	FB061015	061015	1355	W	None	3	X										
8	EB061015	061015	1400	W	None	3	X										
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☒ Std 10 WK days ☐ 5 WK Days ☒ AG Other ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: Ana Gutierrez Date: 6/10/15 Time: 1500 Received by:

Relinquished by: Date: Time: Received by (Laboratory): 6-11-15

Logged by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: 7 Day TAT Results; 10 Day TAT Final

Cooler ID	Cooler Temp.
24327	0.1/0.6

QC Package: (Check One Box Below)

☒ Level 2 Std QC ☒ AG TRRP ChkList

☐ Level 3 Std QC/Row da ☐ TRRP Level 4

☐ Level 4 SW846/CLP

☐ Other/EDD

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

CUSTODY SEAL

Date: 6-10-15 Time: 1500
Name: [illegible]
Company: Arcadis

Seal Broken By: [illegible]
Date: 6/11/15

THU – 11 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 0200 8075 2937 6745

XH SGRA

77099
TX-US IAH

ALS Environmental

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

September 21, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15090638**

Laboratory Results for: **Brickhland NM Semi Annual GW Sampling**

Dear Tim,

ALS Environmental received 7 sample(s) on Sep 15, 2015 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: Dayna.Fisher
Dane J. Wacasey

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
Work Order: HS15090638

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15090638-01	MW-17	Water		14-Sep-2015 09:55	15-Sep-2015 08:50	☐
HS15090638-02	MW-11	Water		14-Sep-2015 10:50	15-Sep-2015 08:50	☐
HS15090638-03	FD091415	Water		14-Sep-2015 00:00	15-Sep-2015 08:50	☐
HS15090638-04	MW-3S	Water		14-Sep-2015 13:30	15-Sep-2015 08:50	☐
HS15090638-05	FB091415	Water		14-Sep-2015 13:40	15-Sep-2015 08:50	☐
HS15090638-06	MW-3D	Water		14-Sep-2015 14:15	15-Sep-2015 08:50	☐
HS15090638-07	EB091415	Water		14-Sep-2015 14:25	15-Sep-2015 08:50	☐

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickhland NM Semi Annual GW Sampling
Work Order: HS15090638

GCMS Volatiles by Method SW8260

Batch ID: R261387

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

Batch ID: R261391

Sample ID: **MW-17 (HS15090638-01)**
- The MS/MSD recovery was below the lower control limit for Benzene.

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090638
Sample ID: MW-17 Lab ID:HS15090638-01
Collection Date: 14-Sep-2015 09:55 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 14:25
Surr: 1,2-Dichloroethane-d4	*97.8*		*71-125*	*%REC*	*1*	*17-Sep-2015 14:25*
Surr: 4-Bromofluorobenzene	*99.5*		*70-125*	*%REC*	*1*	*17-Sep-2015 14:25*
Surr: Dibromofluoromethane	*110*		*74-125*	*%REC*	*1*	*17-Sep-2015 14:25*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*17-Sep-2015 14:25*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090638
Sample ID: MW-11 Lab ID:HS15090638-02
Collection Date: 14-Sep-2015 10:50 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 17:04
Surr: 1,2-Dichloroethane-d4	*93.8*		*71-125*	*%REC*	*1*	*17-Sep-2015 17:04*
Surr: 4-Bromofluorobenzene	*102*		*70-125*	*%REC*	*1*	*17-Sep-2015 17:04*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*1*	*17-Sep-2015 17:04*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*17-Sep-2015 17:04*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090638
Sample ID: FD091415 Lab ID:HS15090638-03
Collection Date: 14-Sep-2015 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 17:30
Surr: 1,2-Dichloroethane-d4	*96.6*		*71-125*	*%REC*	*1*	*17-Sep-2015 17:30*
Surr: 4-Bromofluorobenzene	*101*		*70-125*	*%REC*	*1*	*17-Sep-2015 17:30*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*1*	*17-Sep-2015 17:30*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*17-Sep-2015 17:30*

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

'lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090638
Sample ID: MW-3S Lab ID:HS15090638-04
Collection Date: 14-Sep-2015 13:30 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 17:56
Surr: 1,2-Dichloroethane-d4	*95.6*		*71-125*	*%REC*	*1*	*17-Sep-2015 17:56*
Surr: 4-Bromofluorobenzene	*98.9*		*70-125*	*%REC*	*1*	*17-Sep-2015 17:56*
Surr: Dibromofluoromethane	*105*		*74-125*	*%REC*	*1*	*17-Sep-2015 17:56*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*17-Sep-2015 17:56*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090638
Sample ID: FB091415 Lab ID:HS15090638-05
Collection Date: 14-Sep-2015 13:40 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 13:24
Surr: 1,2-Dichloroethane-d4	*107*		*71-125*	*%REC*	*1*	*17-Sep-2015 13:24*
Surr: 4-Bromofluorobenzene	*93.6*		*70-125*	*%REC*	*1*	*17-Sep-2015 13:24*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*1*	*17-Sep-2015 13:24*
Surr: Toluene-d8	*106*		*75-125*	*%REC*	*1*	*17-Sep-2015 13:24*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickhland NM Semi Annual GW Sampling	WorkOrder:HS15090638
Sample ID:	MW-3D	Lab ID:HS15090638-06
Collection Date:	14-Sep-2015 14:15	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 18:22
Surr: 1,2-Dichloroethane-d4	*95.0*		*71-125*	*%REC*	*1*	*17-Sep-2015 18:22*
Surr: 4-Bromofluorobenzene	*100*		*70-125*	*%REC*	*1*	*17-Sep-2015 18:22*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*1*	*17-Sep-2015 18:22*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*17-Sep-2015 18:22*

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

'lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090638
Sample ID: EB091415 Lab ID:HS15090638-07
Collection Date: 14-Sep-2015 14:25 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 13:50
Surr: 1,2-Dichloroethane-d4	*108*		*71-125*	*%REC*	*1*	*17-Sep-2015 13:50*
Surr: 4-Bromofluorobenzene	*97.3*		*70-125*	*%REC*	*1*	*17-Sep-2015 13:50*
Surr: Dibromofluoromethane	*106*		*74-125*	*%REC*	*1*	*17-Sep-2015 13:50*
Surr: Toluene-d8	*109*		*75-125*	*%REC*	*1*	*17-Sep-2015 13:50*

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090638

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R261387	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS15090638-05	FB091415	14 Sep 2015 13:40			17 Sep 2015 13:24	1
HS15090638-07	EB091415	14 Sep 2015 14:25			17 Sep 2015 13:50	1
Batch ID R261391	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS15090638-01	MW-17	14 Sep 2015 09:55			17 Sep 2015 14:25	1
HS15090638-02	MW-11	14 Sep 2015 10:50			17 Sep 2015 17:04	1
HS15090638-03	FD091415	14 Sep 2015 00:00			17 Sep 2015 17:30	1
HS15090638-04	MW-3S	14 Sep 2015 13:30			17 Sep 2015 17:56	1
HS15090638-06	MW-3D	14 Sep 2015 14:15			17 Sep 2015 18:22	1

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090638

QC BATCH REPORT

Batch ID: R261387 **Instrument:** VOA4 **Method:** SW8260

MBLK Sample ID: **VBLKW-150916** Units: **ug/L** Analysis Date: **17-Sep-2015 12:04**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426644** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*49.83*	*1.0*	*50*	*0*	*99.7*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*46.23*	*1.0*	*50*	*0*	*92.5*	*70 - 125*				
Surr: Dibromofluoromethane	*48.15*	*1.0*	*50*	*0*	*96.3*	*74 - 125*				
Surr: Toluene-d8	*51.34*	*1.0*	*50*	*0*	*103*	*75 - 125*				

LCS Sample ID: **VLCSW-140916** Units: **ug/L** Analysis Date: **17-Sep-2015 10:43**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426642** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	50.84	1.0	50	0	102	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.45*	*1.0*	*50*	*0*	*105*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.07*	*1.0*	*50*	*0*	*100*	*70 - 125*				
Surr: Dibromofluoromethane	*52.05*	*1.0*	*50*	*0*	*104*	*74 - 125*				
Surr: Toluene-d8	*52.81*	*1.0*	*50*	*0*	*106*	*75 - 125*				

MS Sample ID: **HS15090709-01MS** Units: **ug/L** Analysis Date: **17-Sep-2015 14:43**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.6	1.0	50	0	103	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.2*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.41*	*1.0*	*50*	*0*	*98.8*	*70 - 125*				
Surr: Dibromofluoromethane	*53.11*	*1.0*	*50*	*0*	*106*	*74 - 125*				
Surr: Toluene-d8	*51.89*	*1.0*	*50*	*0*	*104*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090638

QC BATCH REPORT

Batch ID: R261387 **Instrument: VOA4** **Method: SW8260**

MSD Sample ID: **HS15090709-01MSD** Units: **ug/L** Analysis Date: **17-Sep-2015 15:11**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426651** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	52.23	1.0	50	0	104	80 - 120	51.6	1.23	20	
Surr: 1,2-Dichloroethane-d4	*52.65*	*1.0*	*50*	*0*	*105*	*71 - 125*	*52.2*	*0.857*	*20*	
Surr: 4-Bromofluorobenzene	*49.93*	*1.0*	*50*	*0*	*99.9*	*70 - 125*	*49.41*	*1.03*	*20*	
Surr: Dibromofluoromethane	*51.88*	*1.0*	*50*	*0*	*104*	*74 - 125*	*53.11*	*2.35*	*20*	
Surr: Toluene-d8	*52.31*	*1.0*	*50*	*0*	*105*	*75 - 125*	*51.89*	*0.81*	*20*	

The following samples were anayzed in this batch: HS15090638-05 HS15090638-07

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090638

QC BATCH REPORT

Batch ID: R261391 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-150917** Units: **ug/L** Analysis Date: **17-Sep-2015 13:59**
Client ID: Run ID: **VOA2_261391** SeqNo: **3426768** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*47.66*	*1.0*	*50*	*0*	*95.3*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.79*	*1.0*	*50*	*0*	*99.6*	*70 - 125*				
Surr: Dibromofluoromethane	*53.75*	*1.0*	*50*	*0*	*108*	*74 - 125*				
Surr: Toluene-d8	*50.59*	*1.0*	*50*	*0*	*101*	*75 - 125*				

LCS Sample ID: **VLCSW-150917** Units: **ug/L** Analysis Date: **17-Sep-2015 13:07**
Client ID: Run ID: **VOA2_261391** SeqNo: **3426767** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.78	1.0	50	0	87.6	80 - 120				
Surr: 1,2-Dichloroethane-d4	*47.17*	*1.0*	*50*	*0*	*94.3*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.26*	*1.0*	*50*	*0*	*101*	*70 - 125*				
Surr: Dibromofluoromethane	*51.43*	*1.0*	*50*	*0*	*103*	*74 - 125*				
Surr: Toluene-d8	*48.95*	*1.0*	*50*	*0*	*97.9*	*75 - 125*				

MS Sample ID: **HS15090638-01MS** Units: **ug/L** Analysis Date: **17-Sep-2015 15:18**
Client ID: **MW-17** Run ID: **VOA2_261391** SeqNo: **3426771** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	38.26	1.0	50	0	76.5	80 - 120				S
Surr: 1,2-Dichloroethane-d4	*47.29*	*1.0*	*50*	*0*	*94.6*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.1*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*49.99*	*1.0*	*50*	*0*	*100.0*	*74 - 125*				
Surr: Toluene-d8	*49.42*	*1.0*	*50*	*0*	*98.8*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090638

QC BATCH REPORT

Batch ID: R261391 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS15090638-01MSD** Units: **ug/L** Analysis Date: **17-Sep-2015 15:44**
Client ID: **MW-17** Run ID: **VOA2_261391** SeqNo: **3426772** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	36.99	1.0	50	0	74.0	80 - 120	38.26	3.36	20	S
Surr: 1,2-Dichloroethane-d4	*47.17*	*1.0*	*50*	*0*	*94.3*	*71 - 125*	*47.29*	*0.265*	*20*	
Surr: 4-Bromofluorobenzene	*50.75*	*1.0*	*50*	*0*	*102*	*70 - 125*	*51.1*	*0.692*	*20*	
Surr: Dibromofluoromethane	*51.15*	*1.0*	*50*	*0*	*102*	*74 - 125*	*49.99*	*2.29*	*20*	
Surr: Toluene-d8	*49.38*	*1.0*	*50*	*0*	*98.8*	*75 - 125*	*49.42*	*0.0765*	*20*	

The following samples were anayzed in this batch: HS15090638-01 HS15090638-02 HS15090638-03 HS15090638-04 HS15090638-06

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: **HS15090638**

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	30-Sep-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
Work Order: HS15090638

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15090638-01	MW-17	Login	9/15/2015 7:14:15 PM	CGG	VW-3
HS15090638-02	MW-11	Login	9/15/2015 7:14:15 PM	CGG	VW-3
HS15090638-03	FD091415	Login	9/15/2015 7:14:15 PM	CGG	VW-3
HS15090638-04	MW-3S	Login	9/15/2015 7:14:15 PM	CGG	VW-3
HS15090638-05	FB091415	Login	9/15/2015 7:14:15 PM	CGG	VW-3
HS15090638-06	MW-3D	Login	9/15/2015 7:14:15 PM	CGG	VW-3
HS15090638-07	EB091415	Login	9/15/2015 7:14:15 PM	CGG	VW-3

ALS Group USA, Corp Date: 21-Sep-15

Sample Receipt Checklist

Client Name: ARCADIS-BATON ROUGE Date/Time Received: 15-Sep-2015 08:50

Work Order: HS15090638 Received by: RPG

Checklist completed by: *Corey Grandits* eSignature 15-Sep-2015 Date Reviewed by: *Dane J. Wacasey* eSignature 17-Sep-2015 Date

Matrices: Water 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	2.7c / 2.6c uc/c	IR1	
Cooler(s)/Kit(s):	Foam		
Date/Time sample(s) sent to storage:	09/15/2015 19:20		
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: Samples MW-11 (vial 3 of 3) and EB091415 (vial 3 of 3) received with no date/time/ID on labels. All vials for sample ID MW-11 have headspace >6mm in diameter.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

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 1

COC ID: 131016

HS15090638

ARCADIS U.S., Inc.

Brickhland NM Semi Annual GW Sampling

n, WV

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	LA003185	Project Name	Brickhland NM Semi Annual GW Samp	A	8260_LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Ratchford	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	091415	0955	W	None	3	X										
2	MW-11		1050	W		3	X										
3	FD091415		—	W		3	X										
4	MW-35		1330	W		3	X										
5	FB091415		1340	W		3	X										
6	MW-3D		1415	W		3	X										
7	EB091415		1425	W		3	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) TAT: 10 days Other:

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Ana Gutierrez	091415	1530		
Relinquished by:	Date:	Time:	Received by (Laboratory): 09/15/15 08:50 RG Sima	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

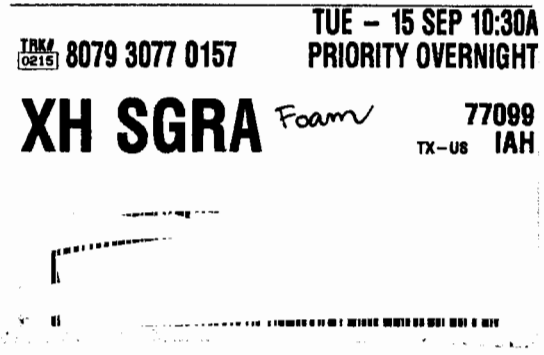
Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)
Foam	2.7	QC Level STD
		Other:

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

IR#1 C/F-0.1

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.


SEAL
9-14-15
QEC
Quality Environmental Containers
800-255-3953 • 304-255-3900


TRK# 0215 8079 3077 0157
TUE – 15 SEP 10:30A
PRIORITY OVERNIGHT
XH SGRA
77099
TX-US IAH

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

September 21, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15090700**

Laboratory Results for: **Brickland NM Semi Annual GW Sampling**

Dear Tim,

ALS Environmental received 6 sample(s) on Sep 16, 2015 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: Dayna.Fisher
Dane J. Wacasey

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15090700

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15090700-01	MW-6S	Water		15-Sep-2015 09:05	16-Sep-2015 13:05	☐
HS15090700-02	MW-6D	Water		15-Sep-2015 09:55	16-Sep-2015 13:05	☐
HS15090700-03	FB-091515	Water		15-Sep-2015 10:00	16-Sep-2015 13:05	☐
HS15090700-04	MW-9S	Water		15-Sep-2015 10:45	16-Sep-2015 13:05	☐
HS15090700-05	MW-5	Water		15-Sep-2015 13:40	16-Sep-2015 13:05	☐
HS15090700-06	EB091515	Water		15-Sep-2015 13:55	16-Sep-2015 13:05	☐

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15090700

GCMS Volatiles by Method SW8260

Batch ID: R261387

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

Batch ID: R261391

Sample ID: **HS15090638-01**
- MS/MSD is for an unrelated sample.

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual GW Sampling	WorkOrder:HS15090700
Sample ID:	MW-6S	Lab ID:HS15090700-01
Collection Date:	15-Sep-2015 09:05	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 18:48
Surr: 1,2-Dichloroethane-d4	*96.0*		*71-125*	*%REC*	*1*	*17-Sep-2015 18:48*
Surr: 4-Bromofluorobenzene	*101*		*70-125*	*%REC*	*1*	*17-Sep-2015 18:48*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*1*	*17-Sep-2015 18:48*
Surr: Toluene-d8	*99.8*		*75-125*	*%REC*	*1*	*17-Sep-2015 18:48*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual GW Sampling	WorkOrder:HS15090700
Sample ID:	MW-6D	Lab ID:HS15090700-02
Collection Date:	15-Sep-2015 09:55	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 19:14
Surr: 1,2-Dichloroethane-d4	*95.5*		*71-125*	*%REC*	*1*	*17-Sep-2015 19:14*
Surr: 4-Bromofluorobenzene	*99.8*		*70-125*	*%REC*	*1*	*17-Sep-2015 19:14*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*1*	*17-Sep-2015 19:14*
Surr: Toluene-d8	*99.8*		*75-125*	*%REC*	*1*	*17-Sep-2015 19:14*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual GW Sampling	WorkOrder:HS15090700
Sample ID:	FB-091515	Lab ID:HS15090700-03
Collection Date:	15-Sep-2015 10:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 15:38
Surr: 1,2-Dichloroethane-d4	*105*		*71-125*	*%REC*	*1*	*17-Sep-2015 15:38*
Surr: 4-Bromofluorobenzene	*94.3*		*70-125*	*%REC*	*1*	*17-Sep-2015 15:38*
Surr: Dibromofluoromethane	*101*		*74-125*	*%REC*	*1*	*17-Sep-2015 15:38*
Surr: Toluene-d8	*102*		*75-125*	*%REC*	*1*	*17-Sep-2015 15:38*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual GW Sampling WorkOrder:HS15090700
Sample ID: MW-9S Lab ID:HS15090700-04
Collection Date: 15-Sep-2015 10:45 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 19:39
Surr: 1,2-Dichloroethane-d4	*97.6*		*71-125*	*%REC*	*1*	*17-Sep-2015 19:39*
Surr: 4-Bromofluorobenzene	*100*		*70-125*	*%REC*	*1*	*17-Sep-2015 19:39*
Surr: Dibromofluoromethane	*108*		*74-125*	*%REC*	*1*	*17-Sep-2015 19:39*
Surr: Toluene-d8	*101*		*75-125*	*%REC*	*1*	*17-Sep-2015 19:39*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
roject: Brickland NM Semi Annual GW Sampling WorkOrder:HS15090700
Sample ID: MW-5 Lab ID:HS15090700-05
Collection Date: 15-Sep-2015 13:40 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	**73**		**10**	**ug/L**	10	17-Sep-2015 20:07
Surr: 1,2-Dichloroethane-d4	*96.3*		*71-125*	*%REC*	*10*	*17-Sep-2015 20:07*
Surr: 4-Bromofluorobenzene	*99.0*		*70-125*	*%REC*	*10*	*17-Sep-2015 20:07*
Surr: Dibromofluoromethane	*107*		*74-125*	*%REC*	*10*	*17-Sep-2015 20:07*
Surr: Toluene-d8	*102*		*75-125*	*%REC*	*10*	*17-Sep-2015 20:07*

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

`lient:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
⁄roject:	Brickland NM Semi Annual GW Sampling	WorkOrder:HS15090700
Sample ID:	EB091515	Lab ID:HS15090700-06
Collection Date:	15-Sep-2015 13:55	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	17-Sep-2015 16:05
Surr: 1,2-Dichloroethane-d4	*106*		*71-125*	*%REC*	*1*	*17-Sep-2015 16:05*
Surr: 4-Bromofluorobenzene	*93.9*		*70-125*	*%REC*	*1*	*17-Sep-2015 16:05*
Surr: Dibromofluoromethane	*101*		*74-125*	*%REC*	*1*	*17-Sep-2015 16:05*
Surr: Toluene-d8	*104*		*75-125*	*%REC*	*1*	*17-Sep-2015 16:05*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15090700

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R261387	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS15090700-03	FB-091515	15 Sep 2015 10:00			17 Sep 2015 15:38	1
HS15090700-06	EB091515	15 Sep 2015 13:55			17 Sep 2015 16:05	1
Batch ID R261391	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS15090700-01	MW-6S	15 Sep 2015 09:05			17 Sep 2015 18:48	1
HS15090700-02	MW-6D	15 Sep 2015 09:55			17 Sep 2015 19:14	1
HS15090700-04	MW-9S	15 Sep 2015 10:45			17 Sep 2015 19:39	1
HS15090700-05	MW-5	15 Sep 2015 13:40			17 Sep 2015 20:07	10

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15090700

QC BATCH REPORT

Batch ID: R261387 **Instrument:** VOA4 **Method:** SW8260

MBLK Sample ID: **VBLKW-150916** Units: **ug/L** Analysis Date: **17-Sep-2015 12:04**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426644** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*49.83*	*1.0*	*50*	*0*	*99.7*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*46.23*	*1.0*	*50*	*0*	*92.5*	*70 - 125*				
Surr: Dibromofluoromethane	*48.15*	*1.0*	*50*	*0*	*96.3*	*74 - 125*				
Surr: Toluene-d8	*51.34*	*1.0*	*50*	*0*	*103*	*75 - 125*				

LCS Sample ID: **VLCSW-140916** Units: **ug/L** Analysis Date: **17-Sep-2015 10:43**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426642** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	50.84	1.0	50	0	102	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.45*	*1.0*	*50*	*0*	*105*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.07*	*1.0*	*50*	*0*	*100*	*70 - 125*				
Surr: Dibromofluoromethane	*52.05*	*1.0*	*50*	*0*	*104*	*74 - 125*				
Surr: Toluene-d8	*52.81*	*1.0*	*50*	*0*	*106*	*75 - 125*				

MS Sample ID: **HS15090709-01MS** Units: **ug/L** Analysis Date: **17-Sep-2015 14:43**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.6	1.0	50	0	103	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.2*	*1.0*	*50*	*0*	*104*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.41*	*1.0*	*50*	*0*	*98.8*	*70 - 125*				
Surr: Dibromofluoromethane	*53.11*	*1.0*	*50*	*0*	*106*	*74 - 125*				
Surr: Toluene-d8	*51.89*	*1.0*	*50*	*0*	*104*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15090700

QC BATCH REPORT

Batch ID: R261387 **Instrument:** VOA4 **Method:** SW8260

MSD Sample ID: **HS15090709-01MSD** Units: **ug/L** Analysis Date: **17-Sep-2015 15:11**
Client ID: Run ID: **VOA4_261387** SeqNo: **3426651** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	52.23	1.0	50	0	104	80 - 120	51.6	1.23	20	
Surr: 1,2-Dichloroethane-d4	*52.65*	*1.0*	*50*	*0*	*105*	*71 - 125*	*52.2*	*0.857*	*20*	
Surr: 4-Bromofluorobenzene	*49.93*	*1.0*	*50*	*0*	*99.9*	*70 - 125*	*49.41*	*1.03*	*20*	
Surr: Dibromofluoromethane	*51.88*	*1.0*	*50*	*0*	*104*	*74 - 125*	*53.11*	*2.35*	*20*	
Surr: Toluene-d8	*52.31*	*1.0*	*50*	*0*	*105*	*75 - 125*	*51.89*	*0.81*	*20*	

The following samples were anayzed in this batch: HS15090700-03 HS15090700-06

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15090700

QC BATCH REPORT

Batch ID: R261391 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-150917** Units: **ug/L** Analysis Date: **17-Sep-2015 13:59**
Client ID: Run ID: **VOA2_261391** SeqNo: **3426768** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*47.66*	*1.0*	*50*	*0*	*95.3*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.79*	*1.0*	*50*	*0*	*99.6*	*70 - 125*				
Surr: Dibromofluoromethane	*53.75*	*1.0*	*50*	*0*	*108*	*74 - 125*				
Surr: Toluene-d8	*50.59*	*1.0*	*50*	*0*	*101*	*75 - 125*				

LCS Sample ID: **VLCSW-150917** Units: **ug/L** Analysis Date: **17-Sep-2015 13:07**
Client ID: Run ID: **VOA2_261391** SeqNo: **3426767** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.78	1.0	50	0	87.6	80 - 120				
Surr: 1,2-Dichloroethane-d4	*47.17*	*1.0*	*50*	*0*	*94.3*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.26*	*1.0*	*50*	*0*	*101*	*70 - 125*				
Surr: Dibromofluoromethane	*51.43*	*1.0*	*50*	*0*	*103*	*74 - 125*				
Surr: Toluene-d8	*48.95*	*1.0*	*50*	*0*	*97.9*	*75 - 125*				

MS Sample ID: **HS15090638-01MS** Units: **ug/L** Analysis Date: **17-Sep-2015 15:18**
Client ID: Run ID: **VOA2_261391** SeqNo: **3426771** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	38.26	1.0	50	0	76.5	80 - 120				S
Surr: 1,2-Dichloroethane-d4	*47.29*	*1.0*	*50*	*0*	*94.6*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.1*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*49.99*	*1.0*	*50*	*0*	*100.0*	*74 - 125*				
Surr: Toluene-d8	*49.42*	*1.0*	*50*	*0*	*98.8*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15090700

QC BATCH REPORT

Batch ID: R261391 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS15090638-01MSD** Units: **ug/L** Analysis Date: **17-Sep-2015 15:44**
Client ID: Run ID: **VOA2_261391** SeqNo: **3426772** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	36.99	1.0	50	0	74.0	80 - 120	38.26	3.36	20	S
Surr: 1,2-Dichloroethane-d4	*47.17*	*1.0*	*50*	*0*	*94.3*	*71 - 125*	*47.29*	*0.265*	*20*	
Surr: 4-Bromofluorobenzene	*50.75*	*1.0*	*50*	*0*	*102*	*70 - 125*	*51.1*	*0.692*	*20*	
Surr: Dibromofluoromethane	*51.15*	*1.0*	*50*	*0*	*102*	*74 - 125*	*49.99*	*2.29*	*20*	
Surr: Toluene-d8	*49.38*	*1.0*	*50*	*0*	*98.8*	*75 - 125*	*49.42*	*0.0765*	*20*	

The following samples were anayzed in this batch: HS15090700-01 HS15090700-02 HS15090700-04 HS15090700-05

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: **HS15090700**

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	30-Sep-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15090700

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15090700-01	MW-6S	Login	9/16/2015 5:55:47 PM	CTC	VW-3
HS15090700-02	MW-6D	Login	9/16/2015 5:58:28 PM	CTC	VW-3
HS15090700-03	FB-091515	Login	9/16/2015 5:58:28 PM	CTC	VW-3
HS15090700-04	MW-9S	Login	9/16/2015 5:58:28 PM	CTC	VW-3
HS15090700-05	MW-5	Login	9/16/2015 5:58:28 PM	CTC	VW-3
HS15090700-06	EB091515	Login	9/16/2015 5:58:28 PM	CTC	VW-3

ALS Group USA, Corp Date: 21-Sep-15

Sample Receipt Checklist

Client Name: ARCADIS-BATON ROUGE Date/Time Received: **16-Sep-2015 13:05**

Work Order: HS15090700 Received by: **RPG**

Checklist completed by: *Charity Carter* 16-Sep-2015 Reviewed by: _____

eSignature | Date eSignature | Date

Matrices: **Waters** 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	14.4c/14.3c u/c		6
Cooler(s)/Kit(s):	Foam		
Date/Time sample(s) sent to storage:	09/16/2015 17:51		
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: Voa vial headspace MW-6S 3 of 3, cooler out of temp, Sample FB091515 on COC label FB091515, time on COC (13:55) does not match label time (13:40) vial 3 of 3 blank

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

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 Custody Form

Page 1 of 1

COC ID: 131015

HS15090700

ARCADIS U.S., Inc.
Brickhland NM Semi Annual GW Sampling

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	LA003185	Project Name	Brickhland NM Semi Annual GW Samp	A	8260_LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Ratchford	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6S	091515	0905	W	None	3	X										
2	MW-6D		0955	W	None	3	X										
3	FB091515		1000	W	None	3	X										
4	MW-9S		1045	W	None	3	X										
5	MW-5		1340	W	None	3	X										
6	EB091515	↓	1355	W	None	3	X										
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) TAT: 10 days Other:

Results Due Date:

Relinquished by: Ana Gutierrez	Date: 091515	Time: 1445	Received by:	Notes:	
Relinquished by:	Date:	Time:	Received by (Laboratory): M. Carter NR 9/16/15 1505	Cooler ID: TAUM Brickland NM	Cooler Temp.: 4.1
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Foam	14.4
					2.2 H1

QC Package: (Check One Box Below)

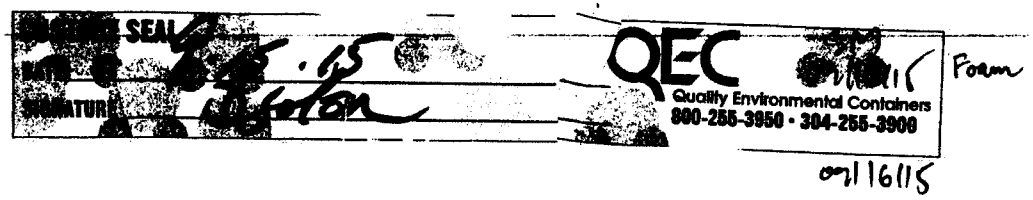
QC Level: STD

Other:

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

CF-0.1

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.


SEAL
QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900
Foam
07116115

ALS Environmental

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

September 25, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15090767**

Laboratory Results for: **Brickhland NM Semi Annual GW Sampling**

Dear Tim,

ALS Environmental received 5 sample(s) on Sep 17, 2015 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: Dayna.Fisher
Dane J. Wacasey

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
Work Order: HS15090767

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15090767-01	MW-8	Water		16-Sep-2015 08:35	17-Sep-2015 08:34	☐
HS15090767-02	FD091615	Water		16-Sep-2015 00:00	17-Sep-2015 08:34	☐
HS15090767-03	FB091615	Water		16-Sep-2015 08:50	17-Sep-2015 08:34	☐
HS15090767-04	EB091615	Water		16-Sep-2015 09:00	17-Sep-2015 08:34	☐
HS15090767-05	MW-10	Water		16-Sep-2015 09:40	17-Sep-2015 08:34	☐

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickhland NM Semi Annual GW Sampling
Work Order: HS15090767

GCMS Semivolatiles by Method SW8270

Batch ID: 97340

Sample ID: **LCS-97340**

- Insufficient sample received to perform MS/MSD. LCS/LCSD provided as batch quality control.
- The RPD between the LCS and LCSD was outside of the control limit for surrogate Nitrobenzene-d5.

GCMS Volatiles by Method SW8260

Batch ID: R261693

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090767
Sample ID: MW-8 Lab ID:HS15090767-01
Collection Date: 16-Sep-2015 08:35 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 22-Sep-2015		Analyst: LG
Acenaphthene	**0.463**		**0.101**	**ug/L**	1	23-Sep-2015 17:02
Acenaphthylene	**0.164**		**0.101**	**ug/L**	1	23-Sep-2015 17:02
Anthracene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Benz(a)anthracene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Benzo(a)pyrene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Benzo(b)fluoranthene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Benzo(g,h,i)perylene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Benzo(k)fluoranthene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Chrysene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Dibenz(a,h)anthracene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Fluoranthene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Fluorene	**0.684**		**0.101**	**ug/L**	1	23-Sep-2015 17:02
Indeno(1,2,3-cd)pyrene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Naphthalene	**7.84**		**0.101**	**ug/L**	1	23-Sep-2015 17:02
Phenanthrene	**0.572**		**0.101**	**ug/L**	1	23-Sep-2015 17:02
Pyrene	< 0.101		0.101	ug/L	1	23-Sep-2015 17:02
Surr: 2-Fluorobiphenyl	*73.7*		*32-130*	*%REC*	*1*	*23-Sep-2015 17:02*
Surr: 4-Terphenyl-d14	*70.4*		*40-135*	*%REC*	*1*	*23-Sep-2015 17:02*
Surr: Nitrobenzene-d5	*118*		*45-142*	*%REC*	*1*	*23-Sep-2015 17:02*
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	**2,400**		**100**	**ug/L**	100	22-Sep-2015 19:52
Surr: 1,2-Dichloroethane-d4	*104*		*71-125*	*%REC*	*100*	*22-Sep-2015 19:52*
Surr: 4-Bromofluorobenzene	*97.8*		*70-125*	*%REC*	*100*	*22-Sep-2015 19:52*
Surr: Dibromofluoromethane	*105*		*74-125*	*%REC*	*100*	*22-Sep-2015 19:52*
Surr: Toluene-d8	*99.2*		*75-125*	*%REC*	*100*	*22-Sep-2015 19:52*

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

lient: ARCADIS U.S., Inc.
ANALYTICAL REPORT
rroject: Brickhland NM Semi Annual GW Sampling
WorkOrder:HS15090767
Sample ID: FD091615
Lab ID:HS15090767-02
Collection Date: 16-Sep-2015 00:00
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 22-Sep-2015		Analyst: LG
Acenaphthene	**0.455**		**0.101**	**ug/L**	1	23-Sep-2015 15:42
Acenaphthylene	**0.189**		**0.101**	**ug/L**	1	23-Sep-2015 15:42
Anthracene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Benz(a)anthracene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Benzo(a)pyrene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Benzo(b)fluoranthene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Benzo(g,h,i)perylene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Benzo(k)fluoranthene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Chrysene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Dibenz(a,h)anthracene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Fluoranthene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Fluorene	**0.682**		**0.101**	**ug/L**	1	23-Sep-2015 15:42
Indeno(1,2,3-cd)pyrene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Naphthalene	**8.85**		**0.101**	**ug/L**	1	23-Sep-2015 15:42
Phenanthrene	**0.566**		**0.101**	**ug/L**	1	23-Sep-2015 15:42
?yrene	< 0.101		0.101	ug/L	1	23-Sep-2015 15:42
Jrr: 2-Fluorobiphenyl	*68.9*		*32-130*	*%REC*	*1*	*23-Sep-2015 15:42*
Surr: 4-Terphenyl-d14	*70.7*		*40-135*	*%REC*	*1*	*23-Sep-2015 15:42*
Surr: Nitrobenzene-d5	*111*		*45-142*	*%REC*	*1*	*23-Sep-2015 15:42*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickhland NM Semi Annual GW Sampling	WorkOrder:HS15090767
Sample ID:	FB091615	Lab ID:HS15090767-03
Collection Date:	16-Sep-2015 08:50	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 22-Sep-2015		Analyst: LG
Acenaphthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Acenaphthylene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Anthracene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Benz(a)anthracene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Benzo(a)pyrene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Benzo(b)fluoranthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Benzo(g,h,i)perylene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Benzo(k)fluoranthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Chrysene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Dibenz(a,h)anthracene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Fluoranthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Fluorene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Indeno(1,2,3-cd)pyrene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Naphthalene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Phenanthrene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Pyrene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:02
Surr: 2-Fluorobiphenyl	*80.2*		*32-130*	*%REC*	*1*	*23-Sep-2015 16:02*
Surr: 4-Terphenyl-d14	*86.0*		*40-135*	*%REC*	*1*	*23-Sep-2015 16:02*
Surr: Nitrobenzene-d5	*81.9*		*45-142*	*%REC*	*1*	*23-Sep-2015 16:02*
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	22-Sep-2015 17:13
Surr: 1,2-Dichloroethane-d4	*101*		*71-125*	*%REC*	*1*	*22-Sep-2015 17:13*
Surr: 4-Bromofluorobenzene	*100*		*70-125*	*%REC*	*1*	*22-Sep-2015 17:13*
Surr: Dibromofluoromethane	*104*		*74-125*	*%REC*	*1*	*22-Sep-2015 17:13*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*22-Sep-2015 17:13*

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

lient: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
Sample ID: EB091615
Collection Date: 16-Sep-2015 09:00

ANALYTICAL REPORT
WorkOrder:HS15090767
Lab ID:HS15090767-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 22-Sep-2015		Analyst: LG
Acenaphthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Acenaphthylene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Anthracene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Benz(a)anthracene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Benzo(a)pyrene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Benzo(b)fluoranthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Benzo(g,h,i)perylene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Benzo(k)fluoranthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Chrysene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Dibenz(a,h)anthracene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Fluoranthene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Fluorene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Indeno(1,2,3-cd)pyrene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Naphthalene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Phenanthrene	**0.109**		**0.102**	**ug/L**	1	23-Sep-2015 16:21
⁻yrene	< 0.102		0.102	ug/L	1	23-Sep-2015 16:21
Jrr: 2-Fluorobiphenyl	*87.9*		*32-130*	*%REC*	*1*	*23-Sep-2015 16:21*
Surr: 4-Terphenyl-d14	*85.2*		*40-135*	*%REC*	*1*	*23-Sep-2015 16:21*
Surr: Nitrobenzene-d5	*77.9*		*45-142*	*%REC*	*1*	*23-Sep-2015 16:21*
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	22-Sep-2015 17:38
Surr: 1,2-Dichloroethane-d4	*102*		*71-125*	*%REC*	*1*	*22-Sep-2015 17:38*
Surr: 4-Bromofluorobenzene	*98.8*		*70-125*	*%REC*	*1*	*22-Sep-2015 17:38*
Surr: Dibromofluoromethane	*106*		*74-125*	*%REC*	*1*	*22-Sep-2015 17:38*
Surr: Toluene-d8	*99.9*		*75-125*	*%REC*	*1*	*22-Sep-2015 17:38*

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

`lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickhland NM Semi Annual GW Sampling WorkOrder:HS15090767
Sample ID: MW-10 Lab ID:HS15090767-05
Collection Date: 16-Sep-2015 09:40 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	22-Sep-2015 19:24
Surr: 1,2-Dichloroethane-d4	*104*		*71-125*	*%REC*	*1*	*22-Sep-2015 19:24*
Surr: 4-Bromofluorobenzene	*101*		*70-125*	*%REC*	*1*	*22-Sep-2015 19:24*
Surr: Dibromofluoromethane	*104*		*74-125*	*%REC*	*1*	*22-Sep-2015 19:24*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*22-Sep-2015 19:24*

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

WEIGHT LOG

ient: ARCADIS U.S., Inc.
. roject: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090767

Batch ID: 97340 **Method:** LOW-LEVEL PAHS - 8270D **Prep:** 3511_PAH

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS15090767-01	1	32.83	2 (mL)	0.06092
HS15090767-02	1	32.57	2 (mL)	0.06141
HS15090767-03	1	32.35	2 (mL)	0.06182
HS15090767-04	1	32.35	2 (mL)	0.06182

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling **DATES REPORT**
WorkOrder: HS15090767

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 97340	**Test Name :** LOW-LEVEL PAHS - 8270D			**Matrix:** Water		
HS15090767-01	MW-8	16 Sep 2015 08:35		22 Sep 2015 09:39	23 Sep 2015 17:02	1
HS15090767-02	FD091615	16 Sep 2015 00:00		22 Sep 2015 09:39	23 Sep 2015 15:42	1
HS15090767-03	FB091615	16 Sep 2015 08:50		22 Sep 2015 09:39	23 Sep 2015 16:02	1
HS15090767-04	EB091615	16 Sep 2015 09:00		22 Sep 2015 09:39	23 Sep 2015 16:21	1
Batch ID R261693	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15090767-01	MW-8	16 Sep 2015 08:35			22 Sep 2015 19:52	100
HS15090767-03	FB091615	16 Sep 2015 08:50			22 Sep 2015 17:13	1
HS15090767-04	EB091615	16 Sep 2015 09:00			22 Sep 2015 17:38	1
HS15090767-05	MW-10	16 Sep 2015 09:40			22 Sep 2015 19:24	1

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090767

QC BATCH REPORT

Batch ID: 97340 **Instrument: SV-6** **Method: SW8270**

MBLK Sample ID: **MBLK-97340** Units: **ug/L** Analysis Date: **23-Sep-2015 14:56**
Client ID: Run ID: **SV-6_261767** SeqNo: **3433690** PrepDate: **22-Sep-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.100	0.100								
Acenaphthylene	< 0.100	0.100								
Anthracene	< 0.100	0.100								
Benz(a)anthracene	< 0.100	0.100								
Benzo(a)pyrene	< 0.100	0.100								
Benzo(b)fluoranthene	< 0.100	0.100								
Benzo(g,h,i)perylene	< 0.100	0.100								
Benzo(k)fluoranthene	< 0.100	0.100								
Chrysene	< 0.100	0.100								
Dibenz(a,h)anthracene	< 0.100	0.100								
Fluoranthene	< 0.100	0.100								
Fluorene	< 0.100	0.100								
Indeno(1,2,3-cd)pyrene	< 0.100	0.100								
Naphthalene	< 0.100	0.100								
Phenanthrene	< 0.100	0.100								
Pyrene	< 0.100	0.100								
Surr: 2-Fluorobiphenyl	*2.289*	*0.100*	*3.03*	*0*	*75.6*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.719*	*0.100*	*3.03*	*0*	*89.7*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.252*	*0.100*	*3.03*	*0*	*74.3*	*45 - 142*				

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090767

QC BATCH REPORT

Batch ID: 97340 **Instrument: SV-6** **Method: SW8270**

LCS Sample ID: **LCS-97340** Units: **ug/L** Analysis Date: **23-Sep-2015 14:17**
Client ID: Run ID: **SV-6_261767** SeqNo: **3433688** PrepDate: **22-Sep-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	2.907	0.100	3.03	0	95.9	40 - 140				
Acenaphthylene	3.01	0.100	3.03	0	99.3	40 - 140				
Anthracene	3.462	0.100	3.03	0	114	40 - 140				
Benz(a)anthracene	2.596	0.100	3.03	0	85.7	40 - 140				
Benzo(a)pyrene	2.297	0.100	3.03	0	75.8	40 - 140				
Benzo(b)fluoranthene	1.995	0.100	3.03	0	65.9	40 - 140				
Benzo(g,h,i)perylene	1.962	0.100	3.03	0	64.7	40 - 140				
Benzo(k)fluoranthene	2.498	0.100	3.03	0	82.4	40 - 140				
Chrysene	2.753	0.100	3.03	0	90.9	40 - 140				
Dibenz(a,h)anthracene	2.039	0.100	3.03	0	67.3	40 - 140				
Fluoranthene	2.877	0.100	3.03	0	95.0	40 - 140				
Fluorene	2.813	0.100	3.03	0	92.8	40 - 140				
Indeno(1,2,3-cd)pyrene	2.248	0.100	3.03	0	74.2	40 - 140				
Naphthalene	2.638	0.100	3.03	0	87.1	40 - 140				
Phenanthrene	2.848	0.100	3.03	0	94.0	40 - 140				
Pyrene	2.709	0.100	3.03	0	89.4	40 - 140				
Surr: 2-Fluorobiphenyl	*2.811*	*0.100*	*3.03*	*0*	*92.8*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.616*	*0.100*	*3.03*	*0*	*86.3*	*40 - 135*				
Surr: Nitrobenzene-d5	*2.102*	*0.100*	*3.03*	*0*	*69.4*	*45 - 142*				

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090767

QC BATCH REPORT

Batch ID: 97340 **Instrument: SV-6** **Method: SW8270**

LCSD Sample ID: **LCSD-97340** Units: **ug/L** Analysis Date: **23-Sep-2015 14:37**
Client ID: Run ID: **SV-6_261767** SeqNo: **3433689** PrepDate: **22-Sep-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	2.695	0.100	3.03	0	88.9	40 - 140	2.907	7.59	25	
Acenaphthylene	2.918	0.100	3.03	0	96.3	40 - 140	3.01	3.1	25	
Anthracene	3.193	0.100	3.03	0	105	40 - 140	3.462	8.08	25	
Benz(a)anthracene	2.452	0.100	3.03	0	80.9	40 - 140	2.596	5.7	25	
Benzo(a)pyrene	2.242	0.100	3.03	0	74.0	40 - 140	2.297	2.42	25	
Benzo(b)fluoranthene	2.119	0.100	3.03	0	69.9	40 - 140	1.995	6	25	
Benzo(g,h,i)perylene	2	0.100	3.03	0	66.0	40 - 140	1.962	1.92	25	
Benzo(k)fluoranthene	2.484	0.100	3.03	0	82.0	40 - 140	2.498	0.545	25	
Chrysene	2.47	0.100	3.03	0	81.5	40 - 140	2.753	10.9	25	
Dibenz(a,h)anthracene	2.07	0.100	3.03	0	68.3	40 - 140	2.039	1.54	25	
Fluoranthene	2.704	0.100	3.03	0	89.2	40 - 140	2.877	6.2	25	
Fluorene	2.68	0.100	3.03	0	88.4	40 - 140	2.813	4.85	25	
Indeno(1,2,3-cd)pyrene	2.293	0.100	3.03	0	75.7	40 - 140	2.248	1.98	25	
Naphthalene	2.757	0.100	3.03	0	91.0	40 - 140	2.638	4.42	25	
Phenanthrene	2.884	0.100	3.03	0	95.2	40 - 140	2.848	1.27	25	
Pyrene	2.348	0.100	3.03	0	77.5	40 - 140	2.709	14.3	25	
Surr: 2-Fluorobiphenyl	*2.256*	*0.100*	*3.03*	*0*	*74.5*	*32 - 130*	*2.811*	*21.9*	*25*	
Surr: 4-Terphenyl-d14	*2.364*	*0.100*	*3.03*	*0*	*78.0*	*40 - 135*	*2.616*	*10.1*	*25*	
Surr: Nitrobenzene-d5	*2.735*	*0.100*	*3.03*	*0*	*90.3*	*45 - 142*	*2.102*	*26.2*	*25*	R

The following samples were anayzed in this batch: HS15090767-01 HS15090767-02 HS15090767-03 HS15090767-04

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090767

QC BATCH REPORT

Batch ID: R261693 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-150922** Units: **ug/L** Analysis Date: **22-Sep-2015 14:41**
Client ID: Run ID: **VOA2_261693** SeqNo: **3432268** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*49.95*	*1.0*	*50*	*0*	*99.9*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.99*	*1.0*	*50*	*0*	*100.0*	*70 - 125*				
Surr: Dibromofluoromethane	*51.39*	*1.0*	*50*	*0*	*103*	*74 - 125*				
Surr: Toluene-d8	*49.16*	*1.0*	*50*	*0*	*98.3*	*75 - 125*				

LCS Sample ID: **VLCSW-150922** Units: **ug/L** Analysis Date: **22-Sep-2015 13:51**
Client ID: Run ID: **VOA2_261693** SeqNo: **3432267** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	47.98	1.0	50	0	96.0	80 - 120				
Surr: 1,2-Dichloroethane-d4	*50.31*	*1.0*	*50*	*0*	*101*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.11*	*1.0*	*50*	*0*	*100*	*70 - 125*				
Surr: Dibromofluoromethane	*49.63*	*1.0*	*50*	*0*	*99.3*	*74 - 125*				
Surr: Toluene-d8	*48.82*	*1.0*	*50*	*0*	*97.6*	*75 - 125*				

MS Sample ID: **HS15090933-05MS** Units: **ug/L** Analysis Date: **22-Sep-2015 15:57**
Client ID: Run ID: **VOA2_261693** SeqNo: **3432271** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	45.92	1.0	50	0	91.8	80 - 120				
Surr: 1,2-Dichloroethane-d4	*50.63*	*1.0*	*50*	*0*	*101*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.99*	*1.0*	*50*	*0*	*100.0*	*70 - 125*				
Surr: Dibromofluoromethane	*48.47*	*1.0*	*50*	*0*	*96.9*	*74 - 125*				
Surr: Toluene-d8	*49.2*	*1.0*	*50*	*0*	*98.4*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090767

QC BATCH REPORT

Batch ID: R261693 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS15090933-05MSD** Units: **ug/L** Analysis Date: **22-Sep-2015 16:23**
Client ID: Run ID: **VOA2_261693** SeqNo: **3432272** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	45.05	1.0	50	0	90.1	80 - 120	45.92	1.91	20	
Surr: 1,2-Dichloroethane-d4	*50.6*	*1.0*	*50*	*0*	*101*	*71 - 125*	*50.63*	*0.0601*	*20*	
Surr: 4-Bromofluorobenzene	*50.51*	*1.0*	*50*	*0*	*101*	*70 - 125*	*49.99*	*1.03*	*20*	
Surr: Dibromofluoromethane	*49.24*	*1.0*	*50*	*0*	*98.5*	*74 - 125*	*48.47*	*1.58*	*20*	
Surr: Toluene-d8	*48.99*	*1.0*	*50*	*0*	*98.0*	*75 - 125*	*49.2*	*0.417*	*20*	

The following samples were analyzed in this batch: HS15090767-01 HS15090767-03 HS15090767-04 HS15090767-05

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

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
WorkOrder: HS15090767

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	30-Sep-2015
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickhland NM Semi Annual GW Sampling
Work Order: HS15090767

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15090767-01	MW-8	Login	9/17/2015 6:56:49 PM	BHH	VW-3
HS15090767-01	MW-8	Login	9/17/2015 6:56:49 PM	BHH	TPH C2
HS15090767-02	FD091615	Login	9/17/2015 6:56:49 PM	BHH	TPH C2
HS15090767-03	FB091615	Login	9/17/2015 6:56:49 PM	BHH	VW-3
HS15090767-03	FB091615	Login	9/17/2015 6:56:49 PM	BHH	TPH C2
HS15090767-04	EB091615	Login	9/17/2015 6:56:49 PM	BHH	VW-3
HS15090767-04	EB091615	Login	9/17/2015 6:56:49 PM	BHH	TPH C2
HS15090767-05	MW-10	Login	9/17/2015 6:56:49 PM	BHH	VW-3

ALS Group USA, Corp Date: 25-Sep-15

Sample Receipt Checklist

Client Name: ARCADIS-BATON ROUGE Date/Time Received: **17-Sep-2015 08:34**

Work Order: HS15090767 Received by: **RPG**

Checklist completed by: *Baudelio Hernandez* 17-Sep-2015
eSignature | Date

Reviewed by: *Dane J. Wacasey* 22-Sep-2015
eSignature | Date

Matrices: **Water** 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	3.1c / 3.0c u/c		IR#1
Cooler(s)/Kit(s):	Foam		
Date/Time sample(s) sent to storage:	09/17/2015 19:00		
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: 1 of 3 vials for EB091615 time=08:35, COC=09:00. Sample collection time was logged per COC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

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 Custody Form

Page 1 of 1

COC ID: 131014

HS15090767

ARCADIS U.S., Inc.
Brickland NM

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	LA003185	Project Name	Brickland NM Semi Annual GW Samp	A	8260_LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Ratchford	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-8	091615	0835	W	Y	6	X	X									
2	FD091615		—	W	Y	3		X									
3	FB091615		0850	W	Y	6	X	X									
4	EB091615		0900	W	Y	6	X	X									
5	MW-10	↓	0940	W	N	3	X										
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) TAT: 10 days Other:

Results Due Date:

Relinquished by: Ana Gutierrez	Date: 091615	Time: 1200	Received by:	Notes:	
Relinquished by:	Date:	Time:	Received by (Laboratory): RG Gima 09/17/15 08:34	Cooler ID: Foam	Cooler Temp.: 3.1 °C
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

QC Package: (Check One Box Below)
QC Level: STD
Other:

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

CIF-01

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.

THU – 17 SEP 10:30A
TRK# 0215 8079 4509 6025 PRIORITY OVERNIGHT

XH SGRA Foam 77099
TX-US IAH

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

December 08, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15120133**

Laboratory Results for: **Brickland NM Semi Annual GW Sampling**

Dear Tim,

ALS Environmental received 7 sample(s) on Dec 03, 2015 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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120133

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15120133-01	MW-17	Water		02-Dec-2015 09:40	03-Dec-2015 09:52	☐
HS15120133-02	FD120215	Water		02-Dec-2015 00:00	03-Dec-2015 09:52	☐
HS15120133-03	MW-11	Water		02-Dec-2015 10:30	03-Dec-2015 09:52	☐
HS15120133-04	MW-3S	Water		02-Dec-2015 13:40	03-Dec-2015 09:52	☐
HS15120133-05	FB120215	Water		02-Dec-2015 13:50	03-Dec-2015 09:52	☐
HS15120133-06	MW-3D	Water		02-Dec-2015 14:25	03-Dec-2015 09:52	☐
HS15120133-07	EB120215	Water		02-Dec-2015 14:35	03-Dec-2015 09:52	☐

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120133

GCMS Volatiles by Method SW8260

Batch ID: R265808,R265887

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
roject: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120133
Sample ID: MW-17 Lab ID:HS15120133-01
Collection Date: 02-Dec-2015 09:40 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	04-Dec-2015 20:05
Surr: 1,2-Dichloroethane-d4	*82.4*		*71-125*	*%REC*	*1*	*04-Dec-2015 20:05*
Surr: 4-Bromofluorobenzene	*98.5*		*70-125*	*%REC*	*1*	*04-Dec-2015 20:05*
Surr: Dibromofluoromethane	*101*		*74-125*	*%REC*	*1*	*04-Dec-2015 20:05*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*04-Dec-2015 20:05*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120133
Sample ID: FD120215 Lab ID:HS15120133-02
Collection Date: 02-Dec-2015 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	04-Dec-2015 20:30
Surr: 1,2-Dichloroethane-d4	*81.0*		*71-125*	*%REC*	*1*	*04-Dec-2015 20:30*
Surr: 4-Bromofluorobenzene	*98.1*		*70-125*	*%REC*	*1*	*04-Dec-2015 20:30*
Surr: Dibromofluoromethane	*101*		*74-125*	*%REC*	*1*	*04-Dec-2015 20:30*
Surr: Toluene-d8	*99.6*		*75-125*	*%REC*	*1*	*04-Dec-2015 20:30*

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

lient: ARCADIS U.S., Inc.
ANALYTICAL REPORT
rroject: Brickland NM Semi Annual GW Sampling
WorkOrder:HS15120133
Sample ID: MW-11
Lab ID:HS15120133-03
Collection Date: 02-Dec-2015 10:30
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	04-Dec-2015 20:55
Surr: 1,2-Dichloroethane-d4	*80.3*		*71-125*	*%REC*	*1*	*04-Dec-2015 20:55*
Surr: 4-Bromofluorobenzene	*99.5*		*70-125*	*%REC*	*1*	*04-Dec-2015 20:55*
Surr: Dibromofluoromethane	*99.5*		*74-125*	*%REC*	*1*	*04-Dec-2015 20:55*
Surr: Toluene-d8	*99.9*		*75-125*	*%REC*	*1*	*04-Dec-2015 20:55*

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

lient: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Sample ID: MW-3S
Collection Date: 02-Dec-2015 13:40

ANALYTICAL REPORT
WorkOrder:HS15120133
Lab ID:HS15120133-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	04-Dec-2015 21:20
Surr: 1,2-Dichloroethane-d4	*84.4*		*71-125*	*%REC*	*1*	*04-Dec-2015 21:20*
Surr: 4-Bromofluorobenzene	*97.3*		*70-125*	*%REC*	*1*	*04-Dec-2015 21:20*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*1*	*04-Dec-2015 21:20*
Surr: Toluene-d8	*99.5*		*75-125*	*%REC*	*1*	*04-Dec-2015 21:20*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120133
Sample ID: FB120215 Lab ID:HS15120133-05
Collection Date: 02-Dec-2015 13:50 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	04-Dec-2015 19:40
Surr: 1,2-Dichloroethane-d4	*82.8*		*71-125*	*%REC*	*1*	*04-Dec-2015 19:40*
Surr: 4-Bromofluorobenzene	*96.9*		*70-125*	*%REC*	*1*	*04-Dec-2015 19:40*
Surr: Dibromofluoromethane	*98.9*		*74-125*	*%REC*	*1*	*04-Dec-2015 19:40*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*04-Dec-2015 19:40*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120133
Sample ID: MW-3D Lab ID:HS15120133-06
Collection Date: 02-Dec-2015 14:25 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	05-Dec-2015 04:27
Surr: 1,2-Dichloroethane-d4	*88.2*		*71-125*	*%REC*	*1*	*05-Dec-2015 04:27*
Surr: 4-Bromofluorobenzene	*97.4*		*70-125*	*%REC*	*1*	*05-Dec-2015 04:27*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*1*	*05-Dec-2015 04:27*
Surr: Toluene-d8	*98.8*		*75-125*	*%REC*	*1*	*05-Dec-2015 04:27*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual GW Sampling	WorkOrder:HS15120133
Sample ID:	EB120215	Lab ID:HS15120133-07
Collection Date:	02-Dec-2015 14:35	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	05-Dec-2015 04:02
Surr: 1,2-Dichloroethane-d4	*86.3*		*71-125*	*%REC*	*1*	*05-Dec-2015 04:02*
Surr: 4-Bromofluorobenzene	*99.7*		*70-125*	*%REC*	*1*	*05-Dec-2015 04:02*
Surr: Dibromofluoromethane	*102*		*74-125*	*%REC*	*1*	*05-Dec-2015 04:02*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*05-Dec-2015 04:02*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120133

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R265808	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15120133-01	MW-17	02 Dec 2015 09:40			04 Dec 2015 20:05	1
HS15120133-02	FD120215	02 Dec 2015 00:00			04 Dec 2015 20:30	1
HS15120133-03	MW-11	02 Dec 2015 10:30			04 Dec 2015 20:55	1
HS15120133-04	MW-3S	02 Dec 2015 13:40			04 Dec 2015 21:20	1
HS15120133-05	FB120215	02 Dec 2015 13:50			04 Dec 2015 19:40	1
Batch ID R265887	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15120133-06	MW-3D	02 Dec 2015 14:25			05 Dec 2015 04:27	1
HS15120133-07	EB120215	02 Dec 2015 14:35			05 Dec 2015 04:02	1

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120133

QC BATCH REPORT

Batch ID: R265808 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-151204** Units: **ug/L** Analysis Date: **04-Dec-2015 11:30**
Client ID: Run ID: **VOA2_265808** SeqNo: **3514731** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*41.16*	*1.0*	*50*	*0*	*82.3*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.58*	*1.0*	*50*	*0*	*99.2*	*70 - 125*				
Surr: Dibromofluoromethane	*49.29*	*1.0*	*50*	*0*	*98.6*	*74 - 125*				
Surr: Toluene-d8	*50.88*	*1.0*	*50*	*0*	*102*	*75 - 125*				

LCS Sample ID: **VLCSW-151204** Units: **ug/L** Analysis Date: **04-Dec-2015 10:39**
Client ID: Run ID: **VOA2_265808** SeqNo: **3514730** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	42.95	1.0	50	0	85.9	80 - 120				
Surr: 1,2-Dichloroethane-d4	*39.99*	*1.0*	*50*	*0*	*80.0*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.02*	*1.0*	*50*	*0*	*100*	*70 - 125*				
Surr: Dibromofluoromethane	*48.38*	*1.0*	*50*	*0*	*96.8*	*74 - 125*				
Surr: Toluene-d8	*48.96*	*1.0*	*50*	*0*	*97.9*	*75 - 125*				

MS Sample ID: **HS15120137-07MS** Units: **ug/L** Analysis Date: **04-Dec-2015 13:10**
Client ID: Run ID: **VOA2_265808** SeqNo: **3514843** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	44.32	1.0	50	0	88.6	80 - 120				
Surr: 1,2-Dichloroethane-d4	*41.49*	*1.0*	*50*	*0*	*83.0*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*50.99*	*1.0*	*50*	*0*	*102*	*70 - 125*				
Surr: Dibromofluoromethane	*49.24*	*1.0*	*50*	*0*	*98.5*	*74 - 125*				
Surr: Toluene-d8	*48.82*	*1.0*	*50*	*0*	*97.6*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120133

QC BATCH REPORT

Batch ID: R265808 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS15120137-07MSD** Units: **ug/L** Analysis Date: **04-Dec-2015 13:35**
Client ID: Run ID: **VOA2_265808** SeqNo: **3514844** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	44.28	1.0	50	0	88.6	80 - 120	44.32	0.0984	20	
Surr: 1,2-Dichloroethane-d4	*43.11*	*1.0*	*50*	*0*	*86.2*	*71 - 125*	*41.49*	*3.82*	*20*	
Surr: 4-Bromofluorobenzene	*50.02*	*1.0*	*50*	*0*	*100*	*70 - 125*	*50.99*	*1.92*	*20*	
Surr: Dibromofluoromethane	*48.72*	*1.0*	*50*	*0*	*97.4*	*74 - 125*	*49.24*	*1.07*	*20*	
Surr: Toluene-d8	*48.17*	*1.0*	*50*	*0*	*96.3*	*75 - 125*	*48.82*	*1.34*	*20*	

The following samples were anayzed in this batch: HS15120133-01 HS15120133-02 HS15120133-03 HS15120133-04 HS15120133-05

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120133

QC BATCH REPORT

Batch ID: R265887 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-151204** Units: **ug/L** Analysis Date: **04-Dec-2015 23:51**
Client ID: Run ID: **VOA2_265887** SeqNo: **3515760** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*42.61*	*1.0*	*50*	*0*	*85.2*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.08*	*1.0*	*50*	*0*	*98.2*	*70 - 125*				
Surr: Dibromofluoromethane	*52.25*	*1.0*	*50*	*0*	*104*	*74 - 125*				
Surr: Toluene-d8	*49.68*	*1.0*	*50*	*0*	*99.4*	*75 - 125*				

LCS Sample ID: **VLCSW-151204** Units: **ug/L** Analysis Date: **04-Dec-2015 23:01**
Client ID: Run ID: **VOA2_265887** SeqNo: **3515759** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.93	1.0	50	0	87.9	80 - 120				
Surr: 1,2-Dichloroethane-d4	*41.88*	*1.0*	*50*	*0*	*83.8*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.72*	*1.0*	*50*	*0*	*99.4*	*70 - 125*				
Surr: Dibromofluoromethane	*49.13*	*1.0*	*50*	*0*	*98.3*	*74 - 125*				
Surr: Toluene-d8	*49.38*	*1.0*	*50*	*0*	*98.8*	*75 - 125*				

MS Sample ID: **HS15120135-01MS** Units: **ug/L** Analysis Date: **05-Dec-2015 01:31**
Client ID: Run ID: **VOA2_265887** SeqNo: **3515764** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	46.05	1.0	50	0	92.1	80 - 120				
Surr: 1,2-Dichloroethane-d4	*42.87*	*1.0*	*50*	*0*	*85.7*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.91*	*1.0*	*50*	*0*	*99.8*	*70 - 125*				
Surr: Dibromofluoromethane	*47.42*	*1.0*	*50*	*0*	*94.8*	*74 - 125*				
Surr: Toluene-d8	*48.42*	*1.0*	*50*	*0*	*96.8*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120133

QC BATCH REPORT

Batch ID: R265887 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS15120135-01MSD** Units: **ug/L** Analysis Date: **05-Dec-2015 01:57**
Client ID: Run ID: **VOA2_265887** SeqNo: **3515765** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.43	1.0	50	0	86.9	80 - 120	46.05	5.85	20	
Surr: 1,2-Dichloroethane-d4	*42.02*	*1.0*	*50*	*0*	*84.0*	*71 - 125*	*42.87*	*2*	*20*	
Surr: 4-Bromofluorobenzene	*50.49*	*1.0*	*50*	*0*	*101*	*70 - 125*	*49.91*	*1.15*	*20*	
Surr: Dibromofluoromethane	*47.11*	*1.0*	*50*	*0*	*94.2*	*74 - 125*	*47.42*	*0.664*	*20*	
Surr: Toluene-d8	*49.68*	*1.0*	*50*	*0*	*99.4*	*75 - 125*	*48.42*	*2.58*	*20*	

The following samples were anayzed in this batch: HS15120133-06 HS15120133-07

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: **HS15120133**

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Jan-2016
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
North Dakota	R-193 2015-2016	30-Apr-2016
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120133

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15120133-01	MW-17	Login	12/3/2015 6:11:00 PM	KRM	VW-3
HS15120133-02	FD120215	Login	12/3/2015 6:11:00 PM	KRM	VW-3
HS15120133-03	MW-11	Login	12/3/2015 6:11:00 PM	KRM	VW-3
HS15120133-04	MW-3S	Login	12/3/2015 6:11:00 PM	KRM	VW-3
HS15120133-05	FB120215	Login	12/3/2015 6:11:00 PM	KRM	VW-3
HS15120133-06	MW-3D	Login	12/3/2015 6:11:00 PM	KRM	VW-3
HS15120133-07	EB120215	Login	12/3/2015 6:11:00 PM	KRM	VW-3

ALS Group USA, Corp Date: 08-Dec-15

Sample Receipt Checklist

Client Name: ARCADIS-BATON ROUGE Date/Time Received: 03-Dec-2015 09:52

Work Order: HS15120133 Received by: JJT

Checklist completed by: *Krysta Mathis* eSignature 3-Dec-2015 Date Reviewed by: *Dane J. Wacasey* eSignature 7-Dec-2015 Date

Matrices: WATER 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	3.1/3.3 U/C	4	
Cooler(s)/Kit(s):	WHITE		
Date/Time sample(s) sent to storage:	12/03/15 19:00		
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:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

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 Custody Form

Page 1 of 1

COC ID: 136690

HS15120133

ARCADIS U.S., Inc.

Brickland NM Semi Annual GW Sampling

ALS Project Manager:

Customer Information		Project Information			
Purchase Order	LA003185	Project Name	Brickland NM Semi Annual GW Sampl	A	8260_LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Ratchford	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-17	120215	0940	W	None	3	X										
2	FD120215		—	W	None	3	X										
3	MW-11		1030 0950 MS	W	None	3	X										
4	MW-35		1340	W	None	3	X										
5	FB120215		1350	W	None	3	X										
6	MW-3D		1425	W	None	3	X										
7	FB120215		1435	W	None	3	X										
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: FedEx

Required Turnaround Time: (Check Box) TAT: 10 days Other:

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Ana Gutierrez	120215	1515		IAGM Brickland NM
Relinquished by:	Date: 12/03/15	Time: 09:52	Received by (Laboratory): Krupa Mathis	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)
white	3.1 °C / 3.3 °F	QC Level STD
		Other:

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.

TRK# 0215 8063 1376 9560

THU – 03 DEC 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

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

December 09, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15120220**

Laboratory Results for: **Brickland NM Semi Annual GW Sampling**

Dear Tim,

ALS Environmental received 6 sample(s) on Dec 04, 2015 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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120220

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15120220-01	MW-6S	Water		03-Dec-2015 08:55	04-Dec-2015 13:03	☐
HS15120220-02	MW- 6D	Water		03-Dec-2015 09:45	04-Dec-2015 13:03	☐
HS15120220-03	FB120315	Water		03-Dec-2015 09:55	04-Dec-2015 13:03	☐
HS15120220-04	MW-9S	Water		03-Dec-2015 10:30	04-Dec-2015 13:03	☐
HS15120220-05	MW-5	Water		03-Dec-2015 11:25	04-Dec-2015 13:03	☐
HS15120220-06	EB120315	Water		03-Dec-2015 11:40	04-Dec-2015 13:03	☐

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120220

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R265910,R265947

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120220
Sample ID: MW-6S Lab ID:HS15120220-01
Collection Date: 03-Dec-2015 08:55 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	07-Dec-2015 16:47
Surr: 1,2-Dichloroethane-d4	*98.0*		*71-125*	*%REC*	*1*	*07-Dec-2015 16:47*
Surr: 4-Bromofluorobenzene	*108*		*70-125*	*%REC*	*1*	*07-Dec-2015 16:47*
Surr: Dibromofluoromethane	*98.3*		*74-125*	*%REC*	*1*	*07-Dec-2015 16:47*
Surr: Toluene-d8	*117*		*75-125*	*%REC*	*1*	*07-Dec-2015 16:47*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
rroject: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120220
Sample ID: MW- 6D Lab ID:HS15120220-02
Collection Date: 03-Dec-2015 09:45 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	07-Dec-2015 17:12
Surr: 1,2-Dichloroethane-d4	*101*		*71-125*	*%REC*	*1*	*07-Dec-2015 17:12*
Surr: 4-Bromofluorobenzene	*106*		*70-125*	*%REC*	*1*	*07-Dec-2015 17:12*
Surr: Dibromofluoromethane	*101*		*74-125*	*%REC*	*1*	*07-Dec-2015 17:12*
Surr: Toluene-d8	*118*		*75-125*	*%REC*	*1*	*07-Dec-2015 17:12*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120220
Sample ID: FB120315 Lab ID:HS15120220-03
Collection Date: 03-Dec-2015 09:55 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	07-Dec-2015 17:36
Surr: 1,2-Dichloroethane-d4	*96.8*		*71-125*	*%REC*	*1*	*07-Dec-2015 17:36*
Surr: 4-Bromofluorobenzene	*106*		*70-125*	*%REC*	*1*	*07-Dec-2015 17:36*
Surr: Dibromofluoromethane	*99.7*		*74-125*	*%REC*	*1*	*07-Dec-2015 17:36*
Surr: Toluene-d8	*118*		*75-125*	*%REC*	*1*	*07-Dec-2015 17:36*

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

Client:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual GW Sampling	WorkOrder:HS15120220
Sample ID:	MW-9S	Lab ID:HS15120220-04
Collection Date:	03-Dec-2015 10:30	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	07-Dec-2015 18:01
Surr: 1,2-Dichloroethane-d4	*100*		*71-125*	*%REC*	*1*	*07-Dec-2015 18:01*
Surr: 4-Bromofluorobenzene	*104*		*70-125*	*%REC*	*1*	*07-Dec-2015 18:01*
Surr: Dibromofluoromethane	*99.4*		*74-125*	*%REC*	*1*	*07-Dec-2015 18:01*
Surr: Toluene-d8	*117*		*75-125*	*%REC*	*1*	*07-Dec-2015 18:01*

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

`lient:	ARCADIS U.S., Inc.	**ANALYTICAL REPORT**
Project:	Brickland NM Semi Annual GW Sampling	WorkOrder:HS15120220
Sample ID:	MW-5	Lab ID:HS15120220-05
Collection Date:	03-Dec-2015 11:25	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	**450**		**10**	**ug/L**	10	07-Dec-2015 20:41
Surr: 1,2-Dichloroethane-d4	*84.7*		*71-125*	*%REC*	*10*	*07-Dec-2015 20:41*
Surr: 4-Bromofluorobenzene	*97.4*		*70-125*	*%REC*	*10*	*07-Dec-2015 20:41*
Surr: Dibromofluoromethane	*97.4*		*74-125*	*%REC*	*10*	*07-Dec-2015 20:41*
Surr: Toluene-d8	*104*		*75-125*	*%REC*	*10*	*07-Dec-2015 20:41*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
Project: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120220
Sample ID: EB120315 Lab ID:HS15120220-06
Collection Date: 03-Dec-2015 11:40 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	07-Dec-2015 18:27
Surr: 1,2-Dichloroethane-d4	*99.3*		*71-125*	*%REC*	*1*	*07-Dec-2015 18:27*
Surr: 4-Bromofluorobenzene	*103*		*70-125*	*%REC*	*1*	*07-Dec-2015 18:27*
Surr: Dibromofluoromethane	*97.0*		*74-125*	*%REC*	*1*	*07-Dec-2015 18:27*
Surr: Toluene-d8	*117*		*75-125*	*%REC*	*1*	*07-Dec-2015 18:27*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling **DATES REPORT**
WorkOrder: HS15120220

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R265910	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15120220-05	MW-5	03 Dec 2015 11:25			07 Dec 2015 20:41	10
Batch ID R265947	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15120220-01	MW-6S	03 Dec 2015 08:55			07 Dec 2015 16:47	1
HS15120220-02	MW- 6D	03 Dec 2015 09:45			07 Dec 2015 17:12	1
HS15120220-03	FB120315	03 Dec 2015 09:55			07 Dec 2015 17:36	1
HS15120220-04	MW-9S	03 Dec 2015 10:30			07 Dec 2015 18:01	1
HS15120220-06	EB120315	03 Dec 2015 11:40			07 Dec 2015 18:27	1

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120220

QC BATCH REPORT

Batch ID: R265910 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-151207** Units: **ug/L** Analysis Date: **07-Dec-2015 11:27**
Client ID: Run ID: **VOA2_265910** SeqNo: **3516089** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*42.78*	*1.0*	*50*	*0*	*85.6*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.13*	*1.0*	*50*	*0*	*98.3*	*70 - 125*				
Surr: Dibromofluoromethane	*51.83*	*1.0*	*50*	*0*	*104*	*74 - 125*				
Surr: Toluene-d8	*50.69*	*1.0*	*50*	*0*	*101*	*75 - 125*				

LCS Sample ID: **VLCSW-151207** Units: **ug/L** Analysis Date: **07-Dec-2015 10:37**
Client ID: Run ID: **VOA2_265910** SeqNo: **3516088** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	44.69	1.0	50	0	89.4	80 - 120				
Surr: 1,2-Dichloroethane-d4	*41.31*	*1.0*	*50*	*0*	*82.6*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.57*	*1.0*	*50*	*0*	*99.1*	*70 - 125*				
Surr: Dibromofluoromethane	*48.57*	*1.0*	*50*	*0*	*97.1*	*74 - 125*				
Surr: Toluene-d8	*48.85*	*1.0*	*50*	*0*	*97.7*	*75 - 125*				

MS Sample ID: **HS15120238-01MS** Units: **ug/L** Analysis Date: **07-Dec-2015 12:42**
Client ID: Run ID: **VOA2_265910** SeqNo: **3516128** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.57	1.0	50	0	87.1	80 - 120				
Surr: 1,2-Dichloroethane-d4	*42.95*	*1.0*	*50*	*0*	*85.9*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*49.17*	*1.0*	*50*	*0*	*98.3*	*70 - 125*				
Surr: Dibromofluoromethane	*49.79*	*1.0*	*50*	*0*	*99.6*	*74 - 125*				
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120220

QC BATCH REPORT

Batch ID: R265910 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS15120238-01MSD** Units: **ug/L** Analysis Date: **07-Dec-2015 13:07**
Client ID: Run ID: **VOA2_265910** SeqNo: **3516129** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	43.51	1.0	50	0	87.0	80 - 120	43.57	0.137	20	
Surr: 1,2-Dichloroethane-d4	*42.71*	*1.0*	*50*	*0*	*85.4*	*71 - 125*	*42.95*	*0.576*	*20*	
Surr: 4-Bromofluorobenzene	*50.14*	*1.0*	*50*	*0*	*100*	*70 - 125*	*49.17*	*1.94*	*20*	
Surr: Dibromofluoromethane	*47.25*	*1.0*	*50*	*0*	*94.5*	*74 - 125*	*49.79*	*5.24*	*20*	
Surr: Toluene-d8	*49.09*	*1.0*	*50*	*0*	*98.2*	*75 - 125*	*49.04*	*0.0958*	*20*	

The following samples were anayzed in this batch: HS15120220-05

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120220

QC BATCH REPORT

Batch ID: R265947 **Instrument:** VOA4 **Method:** SW8260

MBLK Sample ID: **VBLKW-151207** Units: **ug/L** Analysis Date: **07-Dec-2015 11:46**
Client ID: Run ID: **VOA4_265947** SeqNo: **3516859** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*49.08*	*1.0*	*50*	*0*	*98.2*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.28*	*1.0*	*50*	*0*	*105*	*70 - 125*				
Surr: Dibromofluoromethane	*49.1*	*1.0*	*50*	*0*	*98.2*	*74 - 125*				
Surr: Toluene-d8	*58.47*	*1.0*	*50*	*0*	*117*	*75 - 125*				

LCS Sample ID: **VLCSW-151207** Units: **ug/L** Analysis Date: **07-Dec-2015 10:49**
Client ID: Run ID: **VOA4_265947** SeqNo: **3516858** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	53.23	1.0	50	0	106	80 - 120				
Surr: 1,2-Dichloroethane-d4	*48.61*	*1.0*	*50*	*0*	*97.2*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*56.09*	*1.0*	*50*	*0*	*112*	*70 - 125*				
Surr: Dibromofluoromethane	*49.36*	*1.0*	*50*	*0*	*98.7*	*74 - 125*				
Surr: Toluene-d8	*57.99*	*1.0*	*50*	*0*	*116*	*75 - 125*				

MS Sample ID: **HS15120162-05MS** Units: **ug/L** Analysis Date: **07-Dec-2015 12:36**
Client ID: Run ID: **VOA4_265947** SeqNo: **3516860** PrepDate: DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	77550	1000	50000	35150	84.8	80 - 120				
Surr: 1,2-Dichloroethane-d4	*49580*	*1000*	*50000*	*0*	*99.2*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*55970*	*1000*	*50000*	*0*	*112*	*70 - 125*				
Surr: Dibromofluoromethane	*51100*	*1000*	*50000*	*0*	*102*	*74 - 125*				
Surr: Toluene-d8	*57520*	*1000*	*50000*	*0*	*115*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120220

QC BATCH REPORT

Batch ID: R265947 **Instrument:** VOA4 **Method:** SW8260

MSD Sample ID: **HS15120162-05MSD** Units: **ug/L** Analysis Date: **07-Dec-2015 13:01**
Client ID: Run ID: **VOA4_265947** SeqNo: **3516861** PrepDate: DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	77990	1000	50000	35150	85.7	80 - 120	77550	0.556	20	
Surr: 1,2-Dichloroethane-d4	*48440*	*1000*	*50000*	*0*	*96.9*	*71 - 125*	*49580*	*2.32*	*20*	
Surr: 4-Bromofluorobenzene	*55700*	*1000*	*50000*	*0*	*111*	*70 - 125*	*55970*	*0.49*	*20*	
Surr: Dibromofluoromethane	*49450*	*1000*	*50000*	*0*	*98.9*	*74 - 125*	*51100*	*3.28*	*20*	
Surr: Toluene-d8	*57470*	*1000*	*50000*	*0*	*115*	*75 - 125*	*57520*	*0.0791*	*20*	

The following samples were anayzed in this batch: HS15120220-01 HS15120220-02 HS15120220-03 HS15120220-04 HS15120220-06

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120220

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Jan-2016
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
North Dakota	R-193 2015-2016	30-Apr-2016
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120220

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15120220-01	MW-6S	Login	12/5/2015 8:37:28 AM	RPG	VW-3
HS15120220-02	MW- 6D	Login	12/5/2015 8:37:28 AM	RPG	VW-3
HS15120220-03	FB120315	Login	12/5/2015 8:37:28 AM	RPG	VW-3
HS15120220-04	MW-9S	Login	12/5/2015 8:37:28 AM	RPG	VW-3
HS15120220-05	MW-5	Login	12/5/2015 8:37:28 AM	RPG	VW-3
HS15120220-06	EB120315	Login	12/5/2015 8:37:28 AM	RPG	VW-3

ALS Group USA, Corp Date: 09-Dec-15

Sample Receipt Checklist

Client Name: ARCADIS-BATON ROUGE Date/Time Received: **04-Dec-2015 13:03**

Work Order: HS15120220 Received by: **PMG**

Checklist completed by: *Raegen Giga* eSignature 5-Dec-2015 Date Reviewed by: *Dane J. Wacasey* eSignature 8-Dec-2015 Date

Matrices: **WATER** 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	3.0C/3.2C UC/C	ir 4	
Cooler(s)/Kit(s):	FOAM		
Date/Time sample(s) sent to storage:	12/05/2015 08:40		
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:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

ALS Environmental

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 Custody Form

Page 1 of 1

COC ID: 136691

HS15120220

ARCADIS U.S., Inc.

Brickland NM Semi Annual GW Sampling

ALS Project Manager: [redacted]

Customer Information		Project Information			
Purchase Order	LA003185	Project Name	Brickland NM Semi Annual GW Sampl	A	8260_LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B	8270_PAH_LVI
Company Name	ARCADIS U.S., Inc.	Bill To Company	ARCADIS	C	
Send Report To	Tim Ratchford	Invoice Attn	Accounts Payable	D	
Address	10352 Plaza Americana Drive	Address	630 Plaza Drive, Suite 600	E	
				F	
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	G	
Phone	(225) 292-1004	Phone	(303) 471-3699	H	
Fax		Fax		I	
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-6S	120315	0855	W	None	3	X										
2	MW-6D		0945	W			X										
3	FB120315		0955	W			X										
4	MW-9S		1030	W			X										
5	MW-5		1125	W			X										
6	EB120315		1140	W			X										
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

Shipment Method: Fedex

Required Turnaround Time: (Check Box) TAT: 10 days Other:

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Ana Gutierrez	120315	1330	
Relinquished by:	Date:	Time:	Received by (Laboratory): 12.4.15 13:03
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: [AGM Brickland NM]

Cooler ID	Cooler Temp.
1	0.1°C
Fedex	3.5°
	#4
	all < 6°

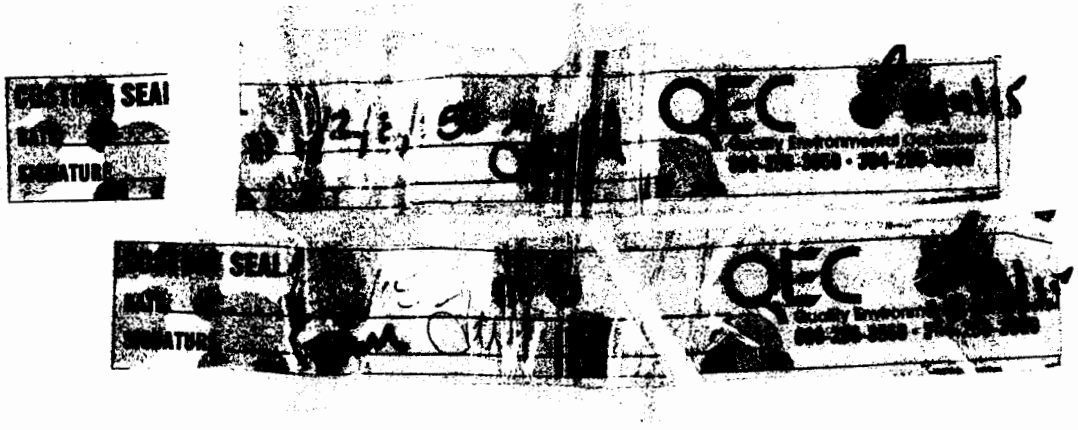
QC Package: (Check One Box Below)

QC Level: STD

Other:

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.


SEAL
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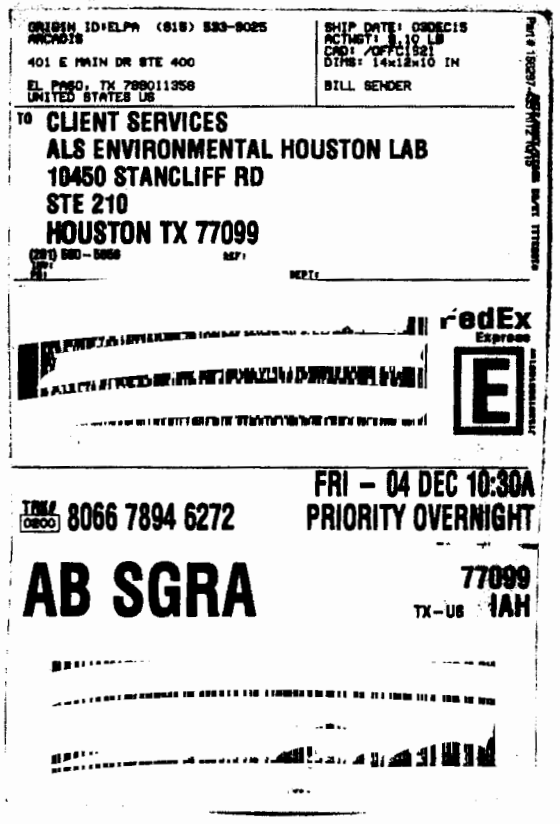
QEC


ORIGIN ID:ELPA (915) 533-9025
ANCHOIS
401 E MAIN DR STE 400
EL PASO, TX 799011358
UNITED STATES US
SHIP DATE: 03DEC15
ACTWGT: 8.10 LB
CAD: /OFFICE21
DIMS: 14x12x10 IN
BILL SENDER
TO CLIENT SERVICES
ALS ENVIRONMENTAL HOUSTON LAB
10450 STANCLIFF RD
STE 210
HOUSTON TX 77099
(281) 530-5656
DEPT:
FedEx Express
FRI - 04 DEC 10:30A
PRIORITY OVERNIGHT
TRK# 0200 8066 7894 6272
AB SGRA
77099
TX-US IAH

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

December 14, 2015

Tim Ratchford
ARCADIS U.S., Inc.
10352 Plaza Americana Drive
Baton Rouge, LA 70816

Work Order: **HS15120241**

Laboratory Results for: **Brickland NM Semi Annual GW Sampling**

Dear Tim,

ALS Environmental received 5 sample(s) on Dec 05, 2015 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: Dayna.Fisher
Dane J. Wacasey

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120241

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS15120241-01	MW-8	Water		04-Dec-2015 08:50	05-Dec-2015 10:00	☐
HS15120241-02	FD120415	Water		04-Dec-2015 00:00	05-Dec-2015 10:00	☐
HS15120241-03	FB120415	Water		04-Dec-2015 08:55	05-Dec-2015 10:00	☐
HS15120241-04	EB 120415	Water		04-Dec-2015 09:00	05-Dec-2015 10:00	☐
HS15120241-05	MW-10	Water		04-Dec-2015 09:45	05-Dec-2015 10:00	☐

Client: ARCADIS U.S., Inc. **CASE NARRATIVE**
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120241

GCMS Semivolatiles by Method SW8270

Batch ID: 99640

Sample ID: **LCS-99640**
- Insufficient sample received to perform MS/MSD. LCS/LCSD provided as batch quality control.

GCMS Volatiles by Method SW8260

Batch ID: R266195

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

Batch ID: R266179

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

lient: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Sample ID: MW-8
Collection Date: 04-Dec-2015 08:50

ANALYTICAL REPORT
WorkOrder:HS15120241
Lab ID:HS15120241-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 09-Dec-2015		Analyst: LG
Acenaphthene	**0.328**		**0.102**	**ug/L**	1	09-Dec-2015 18:08
Acenaphthylene	**0.228**		**0.102**	**ug/L**	1	09-Dec-2015 18:08
Anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Benz(a)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Benzo(a)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Benzo(b)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Benzo(g,h,i)perylene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Benzo(k)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Chrysene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Dibenz(a,h)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Fluorene	**0.583**		**0.102**	**ug/L**	1	09-Dec-2015 18:08
Indeno(1,2,3-cd)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Naphthalene	**7.65**		**0.102**	**ug/L**	1	09-Dec-2015 18:08
Phenanthrene	**0.414**		**0.102**	**ug/L**	1	09-Dec-2015 18:08
Pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:08
Surr: 2-Fluorobiphenyl	*104*		*32-130*	*%REC*	*1*	*09-Dec-2015 18:08*
Surr: 4-Terphenyl-d14	*68.3*		*40-135*	*%REC*	*1*	*09-Dec-2015 18:08*
Surr: Nitrobenzene-d5	*121*		*45-142*	*%REC*	*1*	*09-Dec-2015 18:08*
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	**970**		**100**	**ug/L**	100	10-Dec-2015 17:20
Surr: 1,2-Dichloroethane-d4	*104*		*71-125*	*%REC*	*100*	*10-Dec-2015 17:20*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*100*	*10-Dec-2015 17:20*
Surr: Dibromofluoromethane	*102*		*74-125*	*%REC*	*100*	*10-Dec-2015 17:20*
Surr: Toluene-d8	*103*		*75-125*	*%REC*	*100*	*10-Dec-2015 17:20*

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

lient: ARCADIS U.S., Inc. **ANALYTICAL REPORT**
roject: Brickland NM Semi Annual GW Sampling WorkOrder:HS15120241
Sample ID: FD120415 Lab ID:HS15120241-02
Collection Date: 04-Dec-2015 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 09-Dec-2015		Analyst: LG
Acenaphthene	**0.316**		**0.102**	**ug/L**	1	09-Dec-2015 18:27
Acenaphthylene	**0.252**		**0.102**	**ug/L**	1	09-Dec-2015 18:27
Anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Benz(a)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Benzo(a)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Benzo(b)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Benzo(g,h,i)perylene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Benzo(k)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Chrysene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Dibenz(a,h)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Fluorene	**0.597**		**0.102**	**ug/L**	1	09-Dec-2015 18:27
Indeno(1,2,3-cd)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Naphthalene	**7.13**		**0.102**	**ug/L**	1	09-Dec-2015 18:27
Phenanthrene	**0.412**		**0.102**	**ug/L**	1	09-Dec-2015 18:27
Pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:27
Surr: 2-Fluorobiphenyl	*101*		*32-130*	*%REC*	*1*	*09-Dec-2015 18:27*
Surr: 4-Terphenyl-d14	*64.2*		*40-135*	*%REC*	*1*	*09-Dec-2015 18:27*
Surr: Nitrobenzene-d5	*115*		*45-142*	*%REC*	*1*	*09-Dec-2015 18:27*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Sample ID: FB120415
Collection Date: 04-Dec-2015 08:55

ANALYTICAL REPORT
WorkOrder:HS15120241
Lab ID:HS15120241-03
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 09-Dec-2015		Analyst: LG
Acenaphthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Acenaphthylene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Benz(a)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Benzo(a)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Benzo(b)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Benzo(g,h,i)perylene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Benzo(k)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Chrysene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Dibenz(a,h)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Fluorene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Indeno(1,2,3-cd)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Naphthalene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Phenanthrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 18:47
Surr: 2-Fluorobiphenyl	*95.2*		*32-130*	*%REC*	*1*	*09-Dec-2015 18:47*
Surr: 4-Terphenyl-d14	*91.1*		*40-135*	*%REC*	*1*	*09-Dec-2015 18:47*
Surr: Nitrobenzene-d5	*109*		*45-142*	*%REC*	*1*	*09-Dec-2015 18:47*
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	10-Dec-2015 13:49
Surr: 1,2-Dichloroethane-d4	*104*		*71-125*	*%REC*	*1*	*10-Dec-2015 13:49*
Surr: 4-Bromofluorobenzene	*106*		*70-125*	*%REC*	*1*	*10-Dec-2015 13:49*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*1*	*10-Dec-2015 13:49*
Surr: Toluene-d8	*102*		*75-125*	*%REC*	*1*	*10-Dec-2015 13:49*

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Sample ID: EB 120415
Collection Date: 04-Dec-2015 09:00

ANALYTICAL REPORT
WorkOrder:HS15120241
Lab ID:HS15120241-04
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW-LEVEL PAHS - 8270D		**Method:SW8270**		Prep:SW3511 / 09-Dec-2015		Analyst: LG
Acenaphthene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Acenaphthylene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Benz(a)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Benzo(a)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Benzo(b)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Benzo(g,h,i)perylene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Benzo(k)fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Chrysene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Dibenz(a,h)anthracene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Fluoranthene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Fluorene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Indeno(1,2,3-cd)pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Naphthalene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Phenanthrene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Pyrene	< 0.102		0.102	ug/L	1	09-Dec-2015 19:06
Surr: 2-Fluorobiphenyl	*105*		*32-130*	*%REC*	*1*	*09-Dec-2015 19:06*
Surr: 4-Terphenyl-d14	*90.5*		*40-135*	*%REC*	*1*	*09-Dec-2015 19:06*
Surr: Nitrobenzene-d5	*114*		*45-142*	*%REC*	*1*	*09-Dec-2015 19:06*
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	< 1.0		1.0	ug/L	1	10-Dec-2015 14:14
Surr: 1,2-Dichloroethane-d4	*106*		*71-125*	*%REC*	*1*	*10-Dec-2015 14:14*
Surr: 4-Bromofluorobenzene	*105*		*70-125*	*%REC*	*1*	*10-Dec-2015 14:14*
Surr: Dibromofluoromethane	*103*		*74-125*	*%REC*	*1*	*10-Dec-2015 14:14*
Surr: Toluene-d8	*100*		*75-125*	*%REC*	*1*	*10-Dec-2015 14:14*

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

lient: ARCADIS U.S., Inc.
ANALYTICAL REPORT
rroject: Brickland NM Semi Annual GW Sampling
WorkOrder:HS15120241
Sample ID: MW-10
Lab ID:HS15120241-05
Collection Date: 04-Dec-2015 09:45
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**					**Analyst: AKP**
Benzene	< 1.0		1.0	ug/L	1	11-Dec-2015 13:53
Surr: 1,2-Dichloroethane-d4	*107*		*71-125*	*%REC*	*1*	*11-Dec-2015 13:53*
Surr: 4-Bromofluorobenzene	*110*		*70-125*	*%REC*	*1*	*11-Dec-2015 13:53*
Surr: Dibromofluoromethane	*110*		*74-125*	*%REC*	*1*	*11-Dec-2015 13:53*
Surr: Toluene-d8	*119*		*75-125*	*%REC*	*1*	*11-Dec-2015 13:53*

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

WEIGHT LOG

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

Batch ID: 99640 **Method:** LOW-LEVEL PAHS - 8270D **Prep:** 3511_PAH

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS15120241-01	1	32.22	2 (mL)	0.06207
HS15120241-02	1	32.41	2 (mL)	0.06171
HS15120241-03	1	32.37	2 (mL)	0.06179
HS15120241-04	1	32.39	2 (mL)	0.06175

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 99640	**Test Name :** LOW-LEVEL PAHS - 8270D			**Matrix:** Water		
HS15120241-01	MW-8	04 Dec 2015 08:50		09 Dec 2015 08:30	09 Dec 2015 18:08	1
HS15120241-02	FD120415	04 Dec 2015 00:00		09 Dec 2015 08:30	09 Dec 2015 18:27	1
HS15120241-03	FB120415	04 Dec 2015 08:55		09 Dec 2015 08:30	09 Dec 2015 18:47	1
HS15120241-04	EB 120415	04 Dec 2015 09:00		09 Dec 2015 08:30	09 Dec 2015 19:06	1
Batch ID R266179	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15120241-01	MW-8	04 Dec 2015 08:50			10 Dec 2015 17:20	100
HS15120241-03	FB120415	04 Dec 2015 08:55			10 Dec 2015 13:49	1
HS15120241-04	EB 120415	04 Dec 2015 09:00			10 Dec 2015 14:14	1
Batch ID R266195	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS15120241-05	MW-10	04 Dec 2015 09:45			11 Dec 2015 13:53	1

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

QC BATCH REPORT

Batch ID: 99640 **Instrument: SV-6** **Method: SW8270**

MBLK Sample ID: **MBLK-99640** Units: **ug/L** Analysis Date: **09-Dec-2015 16:50**
Client ID: Run ID: **SV-6_266119** SeqNo: **3519636** PrepDate: **09-Dec-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.100	0.100								
Acenaphthylene	< 0.100	0.100								
Anthracene	< 0.100	0.100								
Benz(a)anthracene	< 0.100	0.100								
Benzo(a)pyrene	< 0.100	0.100								
Benzo(b)fluoranthene	< 0.100	0.100								
Benzo(g,h,i)perylene	< 0.100	0.100								
Benzo(k)fluoranthene	< 0.100	0.100								
Chrysene	< 0.100	0.100								
Dibenz(a,h)anthracene	< 0.100	0.100								
Fluoranthene	< 0.100	0.100								
Fluorene	< 0.100	0.100								
Indeno(1,2,3-cd)pyrene	< 0.100	0.100								
Naphthalene	< 0.100	0.100								
Phenanthrene	< 0.100	0.100								
Pyrene	< 0.100	0.100								
Surr: 2-Fluorobiphenyl	*3.004*	*0.100*	*3.03*	*0*	*99.1*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.855*	*0.100*	*3.03*	*0*	*94.2*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.812*	*0.100*	*3.03*	*0*	*126*	*45 - 142*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

QC BATCH REPORT

Batch ID: 99640 **Instrument: SV-6** **Method: SW8270**

LCS Sample ID: **LCS-99640** Units: **ug/L** Analysis Date: **09-Dec-2015 17:09**
Client ID: Run ID: **SV-6_266119** SeqNo: **3519637** PrepDate: **09-Dec-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.196	0.100	3.03	0	105	40 - 140				
Acenaphthylene	3.244	0.100	3.03	0	107	40 - 140				
Anthracene	2.972	0.100	3.03	0	98.1	40 - 140				
Benz(a)anthracene	2.831	0.100	3.03	0	93.4	40 - 140				
Benzo(a)pyrene	2.501	0.100	3.03	0	82.5	40 - 140				
Benzo(b)fluoranthene	2.519	0.100	3.03	0	83.1	40 - 140				
Benzo(g,h,i)perylene	2.254	0.100	3.03	0	74.4	40 - 140				
Benzo(k)fluoranthene	2.295	0.100	3.03	0	75.8	40 - 140				
Chrysene	2.56	0.100	3.03	0	84.5	40 - 140				
Dibenz(a,h)anthracene	2.283	0.100	3.03	0	75.4	40 - 140				
Fluoranthene	2.749	0.100	3.03	0	90.7	40 - 140				
Fluorene	3.186	0.100	3.03	0	105	40 - 140				
Indeno(1,2,3-cd)pyrene	2.545	0.100	3.03	0	84.0	40 - 140				
Naphthalene	3.204	0.100	3.03	0	106	40 - 140				
Phenanthrene	3.054	0.100	3.03	0	101	40 - 140				
Pyrene	3.068	0.100	3.03	0	101	40 - 140				
Surr: 2-Fluorobiphenyl	*2.923*	*0.100*	*3.03*	*0*	*96.5*	*32 - 130*				
Surr: 4-Terphenyl-d14	*2.762*	*0.100*	*3.03*	*0*	*91.1*	*40 - 135*				
Surr: Nitrobenzene-d5	*3.641*	*0.100*	*3.03*	*0*	*120*	*45 - 142*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

QC BATCH REPORT

Batch ID: 99640 **Instrument: SV-6** **Method: SW8270**

LCSD Sample ID: **LCSD-99640** Units: **ug/L** Analysis Date: **09-Dec-2015 17:29**
Client ID: Run ID: **SV-6_266119** SeqNo: **3519638** PrepDate: **09-Dec-2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Acenaphthene	3.152	0.100	3.03	0	104	40 - 140	3.196	1.39	25	
Acenaphthylene	3.103	0.100	3.03	0	102	40 - 140	3.244	4.43	25	
Anthracene	2.908	0.100	3.03	0	96.0	40 - 140	2.972	2.19	25	
Benz(a)anthracene	2.7	0.100	3.03	0	89.1	40 - 140	2.831	4.72	25	
Benzo(a)pyrene	2.371	0.100	3.03	0	78.3	40 - 140	2.501	5.34	25	
Benzo(b)fluoranthene	2.426	0.100	3.03	0	80.1	40 - 140	2.519	3.76	25	
Benzo(g,h,i)perylene	2.225	0.100	3.03	0	73.4	40 - 140	2.254	1.33	25	
Benzo(k)fluoranthene	2.138	0.100	3.03	0	70.6	40 - 140	2.295	7.1	25	
Chrysene	2.537	0.100	3.03	0	83.7	40 - 140	2.56	0.904	25	
Dibenz(a,h)anthracene	2.221	0.100	3.03	0	73.3	40 - 140	2.283	2.79	25	
Fluoranthene	2.729	0.100	3.03	0	90.1	40 - 140	2.749	0.748	25	
Fluorene	3.59	0.100	3.03	0	118	40 - 140	3.186	11.9	25	
Indeno(1,2,3-cd)pyrene	2.512	0.100	3.03	0	82.9	40 - 140	2.545	1.3	25	
Naphthalene	3.159	0.100	3.03	0	104	40 - 140	3.204	1.42	25	
Phenanthrene	3.001	0.100	3.03	0	99.0	40 - 140	3.054	1.76	25	
Pyrene	2.834	0.100	3.03	0	93.5	40 - 140	3.068	7.94	25	
Surr: 2-Fluorobiphenyl	*2.68*	*0.100*	*3.03*	*0*	*88.4*	*32 - 130*	*2.923*	*8.68*	*25*	
Surr: 4-Terphenyl-d14	*2.625*	*0.100*	*3.03*	*0*	*86.6*	*40 - 135*	*2.762*	*5.05*	*25*	
Surr: Nitrobenzene-d5	*3.503*	*0.100*	*3.03*	*0*	*116*	*45 - 142*	*3.641*	*3.89*	*25*	

The following samples were anayzed in this batch: HS15120241-01 HS15120241-02 HS15120241-03 HS15120241-04

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

QC BATCH REPORT

Batch ID: R266179 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-151210** Units: **ug/L** Analysis Date: **10-Dec-2015 13:24**
Client ID: Run ID: **VOA2_266179** SeqNo: **3520840** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*52.34*	*1.0*	*50*	*0*	*105*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*52.76*	*1.0*	*50*	*0*	*106*	*70 - 125*				
Surr: Dibromofluoromethane	*50.99*	*1.0*	*50*	*0*	*102*	*74 - 125*				
Surr: Toluene-d8	*50.29*	*1.0*	*50*	*0*	*101*	*75 - 125*				

LCS Sample ID: **VLCSW-151210** Units: **ug/L** Analysis Date: **10-Dec-2015 12:34**
Client ID: Run ID: **VOA2_266179** SeqNo: **3520839** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	41.85	1.0	50	0	83.7	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.45*	*1.0*	*50*	*0*	*105*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*54.65*	*1.0*	*50*	*0*	*109*	*70 - 125*				
Surr: Dibromofluoromethane	*49.36*	*1.0*	*50*	*0*	*98.7*	*74 - 125*				
Surr: Toluene-d8	*48.46*	*1.0*	*50*	*0*	*96.9*	*75 - 125*				

MS Sample ID: **HS15120268-10MS** Units: **ug/L** Analysis Date: **10-Dec-2015 18:38**
Client ID: Run ID: **VOA2_266179** SeqNo: **3520852** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22830	500	25000	0	91.3	80 - 120				
Surr: 1,2-Dichloroethane-d4	*26300*	*500*	*25000*	*0*	*105*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*27280*	*500*	*25000*	*0*	*109*	*70 - 125*				
Surr: Dibromofluoromethane	*24830*	*500*	*25000*	*0*	*99.3*	*74 - 125*				
Surr: Toluene-d8	*24940*	*500*	*25000*	*0*	*99.8*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

QC BATCH REPORT

Batch ID: R266179 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS15120268-10MSD** Units: **ug/L** Analysis Date: **10-Dec-2015 19:03**
Client ID: Run ID: **VOA2_266179** SeqNo: **3520853** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21840	500	25000	0	87.4	80 - 120	22830	4.46	20	
Surr: 1,2-Dichloroethane-d4	*25460*	*500*	*25000*	*0*	*102*	*71 - 125*	*26300*	*3.27*	*20*	
Surr: 4-Bromofluorobenzene	*26890*	*500*	*25000*	*0*	*108*	*70 - 125*	*27280*	*1.44*	*20*	
Surr: Dibromofluoromethane	*24010*	*500*	*25000*	*0*	*96.0*	*74 - 125*	*24830*	*3.35*	*20*	
Surr: Toluene-d8	*25000*	*500*	*25000*	*0*	*100*	*75 - 125*	*24940*	*0.25*	*20*	

The following samples were anayzed in this batch: HS15120241-01 HS15120241-03 HS15120241-04

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

QC BATCH REPORT

Batch ID: R266195 **Instrument:** VOA4 **Method:** SW8260

MBLK Sample ID: **VBLKW-151211** Units: **ug/L** Analysis Date: **11-Dec-2015 13:02**
Client ID: Run ID: **VOA4_266195** SeqNo: **3521302** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	< 1.0	1.0								
Surr: 1,2-Dichloroethane-d4	*52.75*	*1.0*	*50*	*0*	*106*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*51.92*	*1.0*	*50*	*0*	*104*	*70 - 125*				
Surr: Dibromofluoromethane	*53.3*	*1.0*	*50*	*0*	*107*	*74 - 125*				
Surr: Toluene-d8	*59.48*	*1.0*	*50*	*0*	*119*	*75 - 125*				

LCS Sample ID: **VLCSW-151211** Units: **ug/L** Analysis Date: **11-Dec-2015 12:11**
Client ID: Run ID: **VOA4_266195** SeqNo: **3521301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.72	1.0	50	0	103	80 - 120				
Surr: 1,2-Dichloroethane-d4	*52.98*	*1.0*	*50*	*0*	*106*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*55.35*	*1.0*	*50*	*0*	*111*	*70 - 125*				
Surr: Dibromofluoromethane	*54.24*	*1.0*	*50*	*0*	*108*	*74 - 125*				
Surr: Toluene-d8	*60.36*	*1.0*	*50*	*0*	*121*	*75 - 125*				

MS Sample ID: **HS15120379-01MS** Units: **ug/L** Analysis Date: **11-Dec-2015 16:27**
Client ID: Run ID: **VOA4_266195** SeqNo: **3521740** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.57	1.0	50	0	103	80 - 120				
Surr: 1,2-Dichloroethane-d4	*54.21*	*1.0*	*50*	*0*	*108*	*71 - 125*				
Surr: 4-Bromofluorobenzene	*56.11*	*1.0*	*50*	*0*	*112*	*70 - 125*				
Surr: Dibromofluoromethane	*55.11*	*1.0*	*50*	*0*	*110*	*74 - 125*				
Surr: Toluene-d8	*60.73*	*1.0*	*50*	*0*	*121*	*75 - 125*				

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: HS15120241

QC BATCH REPORT

Batch ID: R266195 **Instrument:** VOA4 **Method:** SW8260

MSD Sample ID: **HS15120379-01MSD** Units: **ug/L** Analysis Date: **11-Dec-2015 16:52**
Client ID: Run ID: **VOA4_266195** SeqNo: **3521741** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	51.14	1.0	50	0	102	80 - 120	51.57	0.845	20	
Surr: 1,2-Dichloroethane-d4	*53.14*	*1.0*	*50*	*0*	*106*	*71 - 125*	*54.21*	*1.99*	*20*	
Surr: 4-Bromofluorobenzene	*54.94*	*1.0*	*50*	*0*	*110*	*70 - 125*	*56.11*	*2.12*	*20*	
Surr: Dibromofluoromethane	*54.16*	*1.0*	*50*	*0*	*108*	*74 - 125*	*55.11*	*1.74*	*20*	
Surr: Toluene-d8	*59.31*	*1.0*	*50*	*0*	*119*	*75 - 125*	*60.73*	*2.37*	*20*	

The following samples were anayzed in this batch: HS15120241-05

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

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
WorkOrder: **HS15120241**

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
µg/L	Micrograms per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	15-024-0	27-Mar-2016
California	2919	31-Jul-2016
Dept of Defense	L2231 Rev 3-20-2014	22-Dec-2015
Illinois	003622	09-May-2016
Kansas	E-10352 2014-2015	31-Jan-2016
Kentucky	KY 2015-2016	30-Apr-2016
Louisiana	03087 2015/2016	30-Jun-2016
North Carolina	624 - 2015	31-Dec-2015
North Dakota	R-193 2015-2016	30-Apr-2016
Oklahoma	2015-047	31-Aug-2016
Texas	T104704231-15-15	30-Apr-2016

Client: ARCADIS U.S., Inc.
Project: Brickland NM Semi Annual GW Sampling
Work Order: HS15120241

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS15120241-01	MW-8	Login	12/5/2015 1:38:11 PM	RPG	VW-3
HS15120241-01	MW-8	Login	12/5/2015 1:38:11 PM	RPG	TPH C2
HS15120241-02	FD120415	Login	12/5/2015 1:38:11 PM	RPG	TPH C2
HS15120241-03	FB120415	Login	12/5/2015 1:38:11 PM	RPG	VW-3
HS15120241-03	FB120415	Login	12/5/2015 1:38:11 PM	RPG	TPH C2
HS15120241-04	EB 120415	Login	12/5/2015 1:38:11 PM	RPG	VW-3
HS15120241-04	EB 120415	Login	12/5/2015 1:38:11 PM	RPG	TPH C2
HS15120241-05	MW-10	Login	12/5/2015 1:38:11 PM	RPG	VW-3

ALS Group USA, Corp Date: 14-Dec-15

Sample Receipt Checklist

Client Name: ARCADIS-BATON ROUGE Date/Time Received: **05-Dec-2015 10:00**

Work Order: HS15120241 Received by: **RPG**

Checklist completed by: *Raegen Giga* 5-Dec-2015
eSignature | Date

Reviewed by: *Dane J. Wacasey* 8-Dec-2015
eSignature | Date

Matrices: **water** 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 ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
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):	4.2c/4.4c uc/c	IR 4	
Cooler(s)/Kit(s):	Foam		
Date/Time sample(s) sent to storage:	12/05/2015 13:40		
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:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: 0 Regarding:

Comments:

Corrective Action:

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511 | Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Cl +1 304 | in, WV 8
Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 20944

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	LA003185	Project Name	Brickland NM Semi annual GW sampling	A 8260 LL_W (8260 Benzene (Unpres.))
Work Order		Project Number	LA003185	B 8270_PAH_LVI
Company Name	Arcadis	Bill To Company	Arcadis	C
Send Report To	Tim Patchford	Invoice Attn	Accts. Payable	D
Address	10352 Plaza Americano Dr.	Address	630 Plaza Dr. Suite 800	E
City/State/Zip	Baton Rouge, LA 70816	City/State/Zip	Highlands Ranch, CO 80129	F
Phone	(225) 292-1004	Phone	(303) 471-3099	G
Fax		Fax		H
e-Mail Address		e-Mail Address		I
				J

HS15120241

ARCADIS U.S., Inc.

Brickland NM Semi Annual GW Sampling

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-8	120415	0850	W	None	3	X	X									
2	FD120415		—					X									
3	FB120415		0855				X	X									
4	EB120415		0900				X	X									
5	MW-10		0945				X										
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ana Gutierrez

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:	Date:	Time:	Received by:	Notes:
Ana Gutierrez	120415	1200		CAGM Brickland NM
Relinquished by:	Date:	Time:	Received by (Laboratory): R Cisa 12/05/15 10:00 am	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

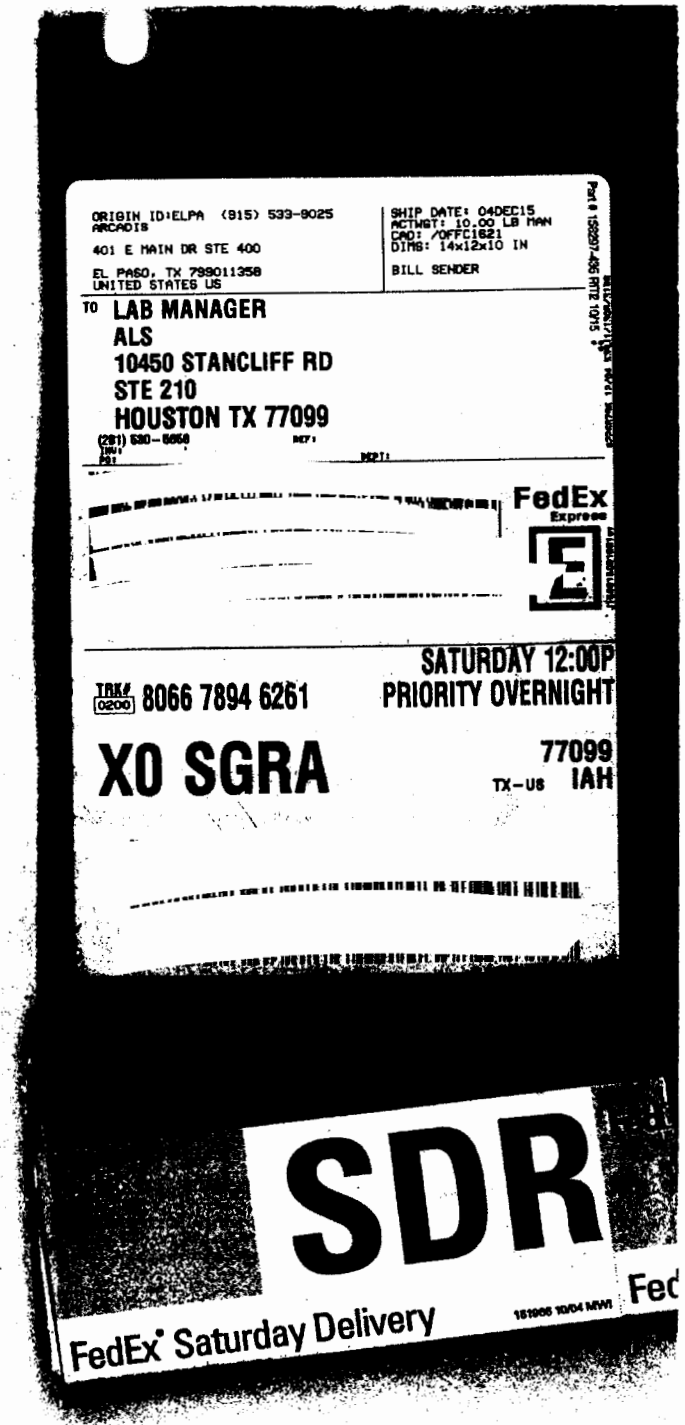
Cooler ID	Cooler Temp
Form	4.2
Row 2	
cf +0.2	

QC Packages: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other QC level: STD

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.


QEC
Quality Environmental Containers
800-256-3866 • 304-255-3866


ORIGIN ID:ELPA (915) 533-9025
ARCADIS
401 E MAIN DR STE 400
EL PASO, TX 799011358
UNITED STATES US
SHIP DATE: 04DEC15
ACTWGT: 10.00 LB MAN
CAD: /OFFC1621
DIMS: 14x12x10 IN
BILL SENDER
TO LAB MANAGER
ALS
10450 STANCLIFF RD
STE 210
HOUSTON TX 77099
(281) 530-5656
FedEx Express
TRK# 0200 8066 7894 6261
SATURDAY 12:00P
PRIORITY OVERNIGHT
XO SGRA
77099
TX-US IAH
SDR
FedEx Saturday Delivery

ARCADIS

Appendix D

Plugging and Abandonment Field Activities Report

HUNTSMAN

Enriching lives through innovation

September 17, 2015

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Subject: Plugging and Abandonment Field Activities Report
Former Brickland Refinery Site
Sunland Park, New Mexico
(Abatement Plan AP-001) – New Mexico Oil Conservation Division Approval Correspondence

Dear Mr. Von Gonten:

Huntsman is providing this letter to the NMOC to report the Well Plugging and Abandonment Field Activities at the Former Brickland Refinery Site. This report includes a description of the field work performed, photographic documentation, and state well plugging reports for all wells plugged and abandoned.

Monitor Well Plugging and Abandonment

On July 20, 2015, Huntsman observed and provided field oversight for the plugging and abandoning twenty one monitoring wells that. The New Mexico-licensed well driller (Maverick Drilling, Marvin McGee) removed the surface completions by way of pulling protective casings using a backhoe due to soft site conditions. In accordance with New Mexico Administrative Code, 19.27.4 NMAC, *Natural Resources and Wildlife, Underground water, well driller licensing; construction, repair and plugging of wells,* all well casings were attempted to be removed by pulling straight up using a backhoe and chain wrapped around the casing. Although effort to remove the casing was made, in some locations not all of the casing was removed due to the casing breaking off below ground surface. The remaining casing and borehole was tremie grouted from the bottom up to ground surface. Table 1 below lists the well names, locations, total depths, and the footage of casing removed from the well.

Table 1: Plugged and Abandoned Monitoring Well information

WELL NAME	CASING SIZE (in)	TOTAL DEPTH (ft)	CASING PULLED (ft)
MW-1	4	14.25	3
MW-4	4	14	10
MW-7	4	13.66	10
MW-12	4	25	15
MW-14	4	23.3	2
MW-15	4	32.2	0
MW-16	4	29.7	2
WP-1	2	9.5	0
WP-2	2	17.6	1

HUNTSMAN

Enriching lives through innovation

WELL NAME	CASING SIZE (inches)	TOTAL DEPTH (foot)	CASING PULLED (foot)
WP-3	2	8.8	1
WP-7	2	17.2	1
WP-14	2	5.6	2
WP-25	2	Unknown	0
WP-26D	2	18.9	10
WP-26S	2	10.8	1
WP-27D	2	14.9	1
WP-27S	2	11.8	1
WP-30	2	10.1	3
WP-31	2	13.5	2.5
WP-32	2	12.6	2
WP-33	2	12	3

The removed well casings were taken by the drillers as directed by Arcadis for disposal at the local landfill. The metal pipes were taken to the recycling facility.

The drilling subcontractor is required by the State of New Mexico to submit State of New Mexico Plugging Reports which includes the wells location, construction, depth, backfill material, and methods of backfill. The State of New Mexico Plugging Reports for all twenty one (21) wells plugged and abandoned are included as an attachment to this letter report. MW-9 was not removed as it could not be located during the P&A event and has not been located during the last 2 years of groundwater monitoring events.

This letter report for plug and abandonment will be provided to the NMOCD with the Annual Groundwater Report due on or before April 1, 2016 as well.

We appreciate your approval to modify the sampling performed at the former Brickland Refinery site. If you have any questions or require additional information on our addendum, please contact me at 281-719-3039 or via email at ed_l_gunderson@huntsman.com.

Sincerely,

Ed Gunderson
Senior Manager, EHS Legal and Regulatory Compliance

HUNTSMAN

Attachment A

Site Map

0 200' 400'

MW-9S
MW-6D
MW-6S
WP-27D
WP-27S
MW-15
WP-1
WP-2
WP-3
WP-32
WP-25
MW-17
MW-10
MW-16
MW-3D
MW-3S
WP-7
WP-31
WP-30
MW-7
MW-11
WP-33
WP-9
RIO GRANDE RIVER
MW-14
MW-8
MW-4
WP-14
MW-1
MW-5
Locations of WP-26S and WP-26D.
Could not be located during P&A event. Not plugged and abandoned.
MW-12

LEGEND

- MW-1 — MONITOR WELL LOCATION AND DESIGNATION
- FENCE
- CULVERT
- APPROXIMATE RIVER SAMPLING LOCATION
- WELL POINT
- MONITOR WELLS FOR BENZENE ANALYSIS
- MONITOR WELLS TO BE PLUGGED AND ABANDONED

PROPOSED – NO FURTHER MONITORING AT UPSTREAM/DOWNSTREAM LOCATIONS.

NOTES:

1. ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

3. SOURCE: GCL FIGURE 2, FPRDCT2. DWG (9/13/95).

FORMER BRICKLAND REFINERY
HUNTSMAN CORPORATION
SUNLAND PARK, NEW MEXICO

SITE LAYOUT

ARCADIS

FIGURE
2

DRAWN BY: S. MEN CHECKED BY: TDR PROJECT MANAGER: DRE
G:\APROJECT\HUNTSMAN\LA003185.0001\Figures\3185-01-02B.dwg PLOTTED: 10/22/2014 9:50 AM BY: MEN, SOTHON

HUNTSMAN

Attachment B

State of New Mexico Plugging Records

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

RECEIVED
JUL 28 2015
STATE ENGINEER OFFICE
LAS CRUCES, NM

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 MW-15

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 39.33 sec
Longitude: 106 deg, 31 min, 59.88 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 32.2 ft below ground level (bgl), by the following manner:

7) Static water level measured at initiation of plugging: 4 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
20	Neat cement grout			Tremie	Removed casing
32.2	----------TD----------	21	21		
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

RECEIVED
JUL 28 2015
STATE ENGINEER OFFICE
LAS CRUCES, NM

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 MW-1

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 50.49 sec
Longitude: 106 deg, 32 min, 08.51 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 14.25 ft below ground level (bgl), by the following manner:

7) Static water level measured at initiation of plugging: 1 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
14.25	----------TD----------	9	9		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

RECEIVED
JUL 28 2015
STATE ENGINEER OFFICE
LAS CRUCES, NM

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 MW-14

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 39.20 sec
Longitude: 106 deg, 32 min, 05.13 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 23.3 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 1.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
20	Neat cement grout			Tremie	Removed casing
23.3	----------TD----------	15	15		
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

RECEIVED
JUL 28 2015
POST ENGINEER OFFICE
LAS CRUCES, NM

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 MW-12

Well owner: Edward Gunderson, Huntsman International, LLC.

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 57.96 sec
Longitude: 106 deg, 32 min, 16.77 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 25 ft below ground level (bgl), by the following manner:

7) Static water level measured at initiation of plugging: 1 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
20	Neat cement grout			Tremie	Removed casing
25	----------TD----------	16	16		
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

RECEIVED
JUL 28 2015
STATE ENGINEER OFFICE
LAS CRUCES, NM

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 MW-16

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 31.05 sec
Longitude: 106 deg, 32 min, 01.28 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 32.2 ft below ground level (bgl), by the following manner: Tape measure

7) Static water level measured at initiation of plugging: 4 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
20	Neat cement grout			Tremie pipe	Removed casing
29.7	----------TD----------	19	19		
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

RECEIVED
JUL 28 2015
STATE ENGINEER OFFICE
LAS CRUCES, NM

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 MW-4

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 14.69 sec
Longitude: 106 deg, 32 min, 05.11 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 14 ft below ground level (bgl), by the following manner:

7) Static water level measured at initiation of plugging: 1.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	removed casing
14	----------TD----------	9	9		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

RECEIVED
JUL 28 2015
STATE ENGINEER OFFICE
LAS CRUCES, NM

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 MW-7

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 36.76 sec
Longitude: 106 deg, 32 min, 02.42 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 13.66 ft below ground level (bgl), by the following manner: Tape measure

7) Static water level measured at initiation of plugging: 2 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie pipe	Removed casing
13.66	----------TD----------	9	9		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Marvin Magee

Signature of Well Driller

July 28 2015

Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-1

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 32.77 sec
Longitude: 106 deg, 32 min, 00.27 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 9.5 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
9.5	----------TD----------	6	6		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller — July 28 2015 — Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-2

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 33.14 sec
Longitude: 106 deg, 32 min, 00.13 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 17.6 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
	Neat cement grout			Tremie	Removed casing
17.6 20	----------TD----------	3	3		
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Marvin Magee — July 28 2015

Signature of Well Driller — Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-3

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 33.62 sec
Longitude: 106 deg, 32 min, 00.17 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 8.8 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
8.8	----------TD----------	1.5	1.4		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller — July 28 2015 (Date)

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-7

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 32.47 sec
Longitude: 106 deg, 32 min, 01.25 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 17.2 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
17.2 / 20	---------TD----------	2.5	2.8		
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-14

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 47.01 sec
Longitude: 106 deg, 32 min, 07.05 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 5.6 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 1 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
5.6	----------TD----------	1	1		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Marvin Magee — July 28 2015

Signature of Well Driller — Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-25

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg. 47 min. 32.51 sec
Longitude: 106 deg. 32 min. 00.85 sec. WGS 84

6) Depth of well confirmed at initiation of plugging as: 15 ft below ground level (bgl), by the following manner: Tape measure

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
	Neat cement grout			Tremie pipe	Removedcasing
15	----------TD----------	2	2.4		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7 4805	=	gallons
cubic yards	x	201 97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller — July 28 2015 (Date)

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-26D

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 32.76 sec
Longitude: 106 deg, 32 min, 01.04 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 14.7 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 2 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie pipe	Removed casing
14.7	----------TD----------	2.5	2.4		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-26S

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 32.76 sec
Longitude: 106 deg, 32 min, 01.00 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 13.7 ft below ground level (bgl), by the following manner: Tape measure

7) Static water level measured at initiation of plugging: 2 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie pipe	Removed casing
13.7	TD	2	2.2		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-27D

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 30.05 sec
Longitude: 106 deg, 31 min, 59.39 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 14.9 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 4 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
14.9	TD	2	2.5		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

S/Marvin Magee — July 28 2015

Signature of Well Driller — Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-27S

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 30.14 sec
Longitude: 106 deg, 31 min, 59.39 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 11.8 ft below ground level (bgl), by the following manner:

7) Static water level measured at initiation of plugging: 4 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
11.8	----------TD----------	2	1.9		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

July 28 2015
Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-30

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 33.73 sec
Longitude: 106 deg, 32 min, 02.37 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 10.1 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
10.1	----------TD----------	1.5	1.6		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Marvin Magee — July 28 2015

Signature of Well Driller — Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-31

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 31.09 sec
Longitude: 106 deg, 32 min, 01.48 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 13.5 ft below ground level (bgl).
by the following manner: _____

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (treme pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
	Neat cement grout			Tremie	Removed casing
13.5	----------TD----------	2	2.2		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7 4805	=	gallons
cubic yards	x	201 97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller — July 28 2015 — Date

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-32

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.:

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg. 47 min. 30.36 sec
Longitude: 106 deg. 32 min. 00.07 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 12.6 ft below ground level (bgl), by the following manner:

7) Static water level measured at initiation of plugging: 4 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	Neat cement grout			Tremie	Removed casing
12.6	----------TD----------	2	2		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller — Date: July 28 2015

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: LRG-16012 WP-33

Well owner: Edward Gunderson, Huntsman International, LLC. Phone No.: _____

Mailing address: 8600 Gosling Road

City: The Woodlands State: Texas Zip code: 77381

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Maverick Drilling, Inc.

2) New Mexico Well Driller License No.: WD-1449 Expiration Date: June 30, 2016

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Marvin Magee and Johnny Arnett

4) Date well plugging began: July 21, 2015 Date well plugging concluded: July 21, 2015

5) GPS Well Location: Latitude: 31 deg, 47 min, 33.55 sec
Longitude: 106 deg, 32 min, 03.01 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 12 ft below ground level (bgl), by the following manner: _____

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: July 1, 2015

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0					
	Neat cement grout			Tremie	Removed casing
12	----------TD----------	2	2		
20					
40					
60					
80					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Marvin Magee, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Marvin Magee — Signature of Well Driller

July 28 2015 — Date

HUNTSMAN

Attachment C

Photographic Documentation

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
1	7/20/15

Description:

Pulling protective casing from well MW-4 using a backhoe.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
2	7/20/15

Description:

Pulling casing from well MW-4.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
3	7/20/15

Description:

Showing 10 feet of casing pulled from well MW-4.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
4	7/20/15

Description:

Grouting MW-4 using a hose starting at the bottom of the well and pulling it up as the well fills with cement grout.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
5	7/20/15

Description:

Pulling casing from well WP-25 using a backhoe.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
6	7/20/15

Description:

WP-25 hole after casing was pulled

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
7	7/20/15

Description:

WP-25 grouted

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
8	7/20/15

Description:

WP-27D casing pulled using a backhoe.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
9	7/20/15

Description:

Well casing WP-26S being pulled with a backhoe.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
10	7/20/15

Description:

Well WP-26S grouted with cement grout after being pulled.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
11	7/20/15

Description:

WP-2 being plugged using a bucket full of cement grout due to the location being in soft sand, trailer could not drive to location.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
12	7/20/15

Description:

Well point casing WP-14 being pulled with a backhoe.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
13	7/20/15

Description:

WP-14 close up of where the pipe broke at approximately 2 feet below surface.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
14	7/20/15

Description:

A stake was placed as a marker on WP-14 to locate it in the future for excavation of "tar" material below ground surface.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
15	7/20/15

Description:

Pulling casing from well MW-1.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
16	7/20/15

Description:

Grouting MW-1 using a hose starting at the bottom of the well and pulling it up as the well fills with cement grout.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
17	7/20/15

Description:

Pulling protective casing from well MW-12.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
18	7/20/15

Description:

Pulling casing from well MW-12.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
19	7/20/15

Description:

Grouting MW-12 using a hose starting at the bottom of the well and pulling it up as the well fills with cement grout.

ARCADIS

PHOTOGRAPHIC LOG

Property Name:	Location:	Project No.
Former Huntsman Refinery Site	Sunland Park, New Mexico	LA003185.2015

Photo No.	Date:
20	7/20/15

Description:

MW-12 grouted.

ARCADIS

Appendix E

WP-14 Limited Excavations Field Activities Report

HUNTSMAN

Enriching lives through innovation

February 8, 2016

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Subject: WP-14 Limited Excavations Field Activities Report
Former Brickland Refinery Site
Sunland Park, New Mexico
(Abatement Plan AP-001) – New Mexico Oil Conservation Division Approval Correspondence

Dear Mr. Von Gonten:

Huntsman is providing this letter to the NMOCD to report the Well Point WP-14 Limited Excavation Field Activities at the Former Brickland Refinery Site. This report includes a description of the field work performed, photographic documentation, and waste characterization and transportation documents.

New Mexico One-Call Services and Utility Checklists

On November 2, 2015, ARCADIS submitted a New Mexico 811 (NM811) ticket to ensure utilities were marked out prior to the mobilization date of November 11, 2015. NM811 ticket number was submitted as part of ARCADIS policy to identify three lines of evidence prior to performing any intrusive work at project sites. Other lines of evidence used were client / owner interviews and map as well as visual surveys once onsite. All areas of excavations were cleared by utility companies with services in the area prior to beginning excavation activities. ARCADIS' checklist for utility clearance and the NM811 ticket are included as an attachment in Appendix D.

Field Activities

On November 11, 2015, ARCADIS mobilized a backhoe with operator to the site to begin excavation around WP-14. Initial excavation activities were directly on top of the location of former WP-14 to determine if the "tar" material seen during groundwater gauging event was pooling around the WP-14 location. A seam of "tar" material was observed on the second bucket removed at approximately 2.5 feet below ground surface which happened to coincide with a location of a heavily corroded metal pipe. The "tar" material was immediately removed and placed into lined 20 cubic yard (cyd) roll off bins that were staged onsite to minimize mixing of surrounding soils with the "tar" material within the excavation. ARCADIS then excavated in all directions to ensure all tar material and impacted soil was removed.

During excavation activities to the east of the WP-14 location additional corroded pipe was observed to make a "T" into the area of the "tar" impacted material at WP-14. Excavations continued along this pipe run as it was a possible source area of the "tar" material. Approximately 10 feet of 3 to 4 inch diameter corroded metal pipe was found, removed from the ground, and placed into the roll off bin. Visual evidence of staining likely from "tar" material that once passed through this pipe was removed and also placed into roll offs. Excavations extended approximately 10 feet each direction from WP-14 to ensure no other "tar" material was found away from the WP-14 area.

No further impacts of "tar" material were observed away from the pipe run to the east or directly underneath WP-14; therefore ARCADIS stopped the excavation to limit soil volumes generated. The total volume removed for the excavation was approximately 50-60 cubic yards which was stored in

three 20 cyd roll off bins. In an abundance of caution, more soil was removed than initially expected for the limited excavation to ensure that all "tar" material and tar impacted soils once related to WP-14 were addressed.

Once all soil was removed from the excavation and stored in roll off bins the excavation was backfilled with material that had been historically stockpiled on-site to the north of WP-14, outside of the known lead impacted area to the south of WP-14. Backfill material was compacted as it was introduced to the excavation to limit future settlement of soils and the surface of the excavation backfill was levelled to the existing grade surrounding the excavation.

Waste Management

ARCADIS handled the waste management of the roll off bins which included the sampling and profiling of the waste to obtain approvals for transportation and disposal. Once roll off bins were covered and secured they were moved to an area inside the site security fence closer to the front of the facility to allow for easier access for waste characterization sampling and loading for transport to the licensed facility for disposal. ARCADIS collected one composite sample per bin to be representative of the material within each bin, which was analyzed for volatile organic compounds, Toxicity Characterization Leachate Procedure (TCLP) benzene, TCLP11 metals, polychlorinated biphenyls, gasoline range organics and diesel range organics by ALS Laboratories. Once all analytical results were received, the waste streams were profiled and sent to US Ecology in Robstown, Texas for classification and approval for disposal.

Based on the analytical results for the roll off bins one roll off bin (Bin #942) was classified as hazardous waste due to the TCLP analysis of 12.7 mg/l for lead exceeding the EPA threshold of 5.0 mg/L for characteristic hazardous waste, and two of the roll off bins (Bin # 1168 and 1171) were classified as non-hazardous waste. We believe the lead detected in the soil sample from bin 942 is due to the proximity of well point WP-14 to the known surface impacts of lead in the soil to the south of the location, based on an historical investigation and subsequent clay cap placement reports.

On January 25 and 26, 2016, the three roll off bins were removed from the site under uniform hazardous waste manifests by Chemical Transportation Inc., a licensed waste hauler. The three bins were transported to US Ecology in Robstown, Texas for disposal. Waste profiles and manifest documentation are attached as Appendix B of this report.

This letter report for WP-14 Limited Excavation will also be provided to the NMOCD with the Annual Groundwater Report due on or before April 1, 2016.

If you have any questions or require additional information on our addendum, please contact me at 281-719-3039 or via email at ed_l_gunderson@huntsman.com.

Sincerely,

Edward L Gunderson

Edward L. Gunderson
Senior Manager, EHS Legal and Regulatory Compliance

HUNTSMAN

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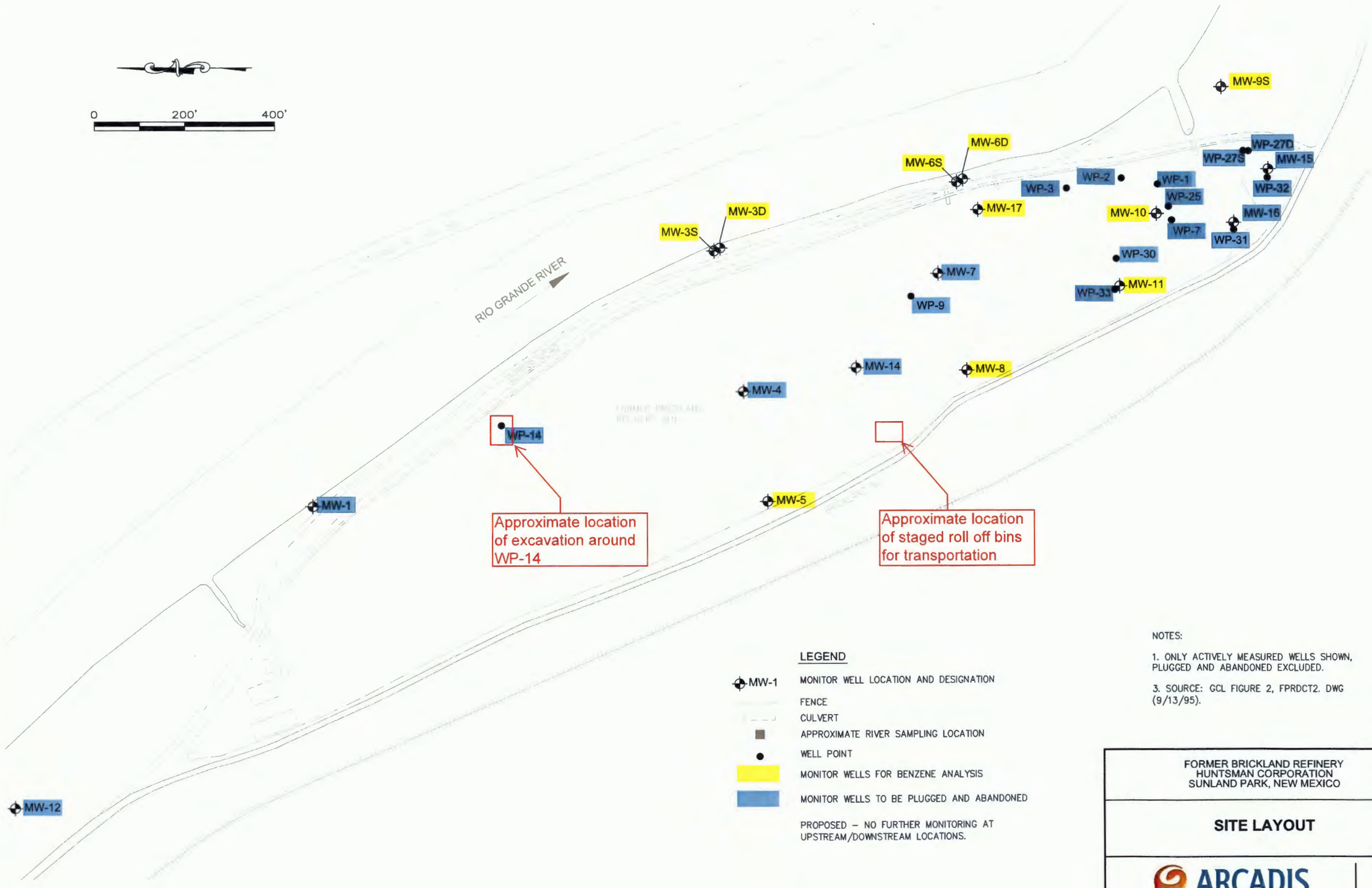
Attachment A

Site Map

0 200' 400'



LEGEND

- MW-1 — MONITOR WELL LOCATION AND DESIGNATION
- FENCE
- CULVERT
- APPROXIMATE RIVER SAMPLING LOCATION
- WELL POINT
- MONITOR WELLS FOR BENZENE ANALYSIS
- MONITOR WELLS TO BE PLUGGED AND ABANDONED
- PROPOSED – NO FURTHER MONITORING AT UPSTREAM/DOWNSTREAM LOCATIONS.

NOTES:

1. ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

3. SOURCE: GCL FIGURE 2, FPRDCT2. DWG (9/13/95).

FORMER BRICKLAND REFINERY
HUNTSMAN CORPORATION
SUNLAND PARK, NEW MEXICO

SITE LAYOUT

ARCADIS

FIGURE
2

DRAWN BY: S. MEN CHECKED BY: TDR PROJECT MANAGER: DRE
G:\APROJECT\HUNTSMAN\LA003185.0001\Figures\13185-01-02B.dwg PLOTTED: 10/22/2014 8:50 AM BY: MEN, SOTHON

HUNTSMAN

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Attachment B

Waste Profiles and Approval documentation including Analytical Results

and

Uniform Hazardous Waste Manifests

US ecology

WASTE PROFILE FORM

US Ecology Nevada (Beatty) 800-239-3943
US Ecology Idaho (Grand View) 800-274-1516
US Ecology Texas (Robstown) 800-242-3209
US Ecology Michigan (Detroit) 800-396-3265

PROFILE #_____

A. GENERATOR INFORMATION

1. Generator: HUNTSMAN INTERNATIONAL, LLC	☐ Billing information is same ☑ P.O. required for payment
2. Facility Address: 3010 OLD McNUTT ROAD SUNLAND PARK, NM 88063	12. Billing Company: ARCADIS
	13. Billing Address: 630 PLAZA DRIVE
3. Mailing Address: 8600 GOSLING ROAD	14. City/State/Zip: HIGHLANDS RANCH / COLORADO /
4. City/State/Zip: THE WOODLAND / TEXAS / 77381	15. Billing Contact: ACCOUNTS PAYABLE - PO# - LA003185.2015
5. Technical Contact: EDWARD L. GUNDERSON	16. Phone: 720-344-3500 17. Fax:
6. Phone: 281-719-3039 7. Fax:	18. Email: ACCOUNTSPAYABLE.ADMINISTRATION@ARCADIS.COM

8. Generator Status: ☐ CESQG ☐ SQG ☑ LQG

9. EPA ID #: NMR000022293 10. State ID #: D0035

11. SIC Codes: 2911

B. SHIPPING INFORMATION

1. US DOT Shipping name: Hazardous Waste Solid, n.o.s. (Lead)

2. Hazard Class: 9 3. UN/NA #: NA3077 4. Packaging Group: III 5. RQ:

6. Container Type: ☑ Bulk ☐ Totes ☐ Pallet ☐ Boxes ☐ Drums ☐ Other, Describe:

7. Frequency: ☐ Year ☐ Quarterly ☐ Monthly ☑ 1 time ☐ Other, Describe:

8. Shipment: Size: Tons Quantity: 17

9. Waste Import: ☐ Yes ☑ No *(If yes, complete Waste Import Supplement)*

C. GENERAL MATERIAL & REGULATORY INFORMATION

1. Common name for this waste: Lead Impacted Soil

2. Process generating the material:
EXCAVATION OF SOILS NEAR A MONITORING WELL THAT SHOWED EVIDENCE OF VISCOUS MATERIAL INSIDE WELL. REMOVAL OF SOIL WAS TO LIMIT FUTURE IMPACTS TO THE SITE. (See ALS Environmental analysis, Work Order: HS15110639, results for bin 942 only)

3. Describe physical appearance and odor of the waste:
BROWN SANDY CLAY SOIL WITH INCLUSIONS OF GRAY CLAYEY SOILS AND MINOR AMOUNTS OF BLACK VISCOUS MATERIAL. STRONG HYDROCARBON ODOR WHEN MATERIAL IS DISTURBED.

4. Odor of the waste: ☐ None ☐ Slight ☑ Strong
5. Physical State: ☐ Liquid ☐ Sludge/Slurry ☑ Solid
6. Describe Color: BROWN
7. Liquid phases: ☐ Single ☐ Double Layer ☐ Multi-layer
8. Knowledge is from: ☑ Lab analysis ☐ MSDS ☐ Process/generator knowledge
9. Waste Type (US Ecology Texas customers only): ☐ N/A ☑ Industrial ☐ Non-Industrial
10. Is the waste restricted under EPA Land Disposal Restrictions (§268)? ☑ Yes ☐ No
11. If LDR "Yes", is waste: ☐ Wastewater ☑ Non-wastewater ☐ Debris (§268.2)
12. Alt. Standards for soil? ☐ Yes ☑ No
13. Is the waste RCRA hazardous waste containing benzene and originating at a Petroleum Refinery (SIC 2911), Chemical Manufacturing Plant (SIC 2800 thru 2899) or Coke by-Product Recovery Plant (SIC 3312)? *(If yes, complete Benzene Waste Operations Supplement Form and Thermal Supplement Form)*: ☑ Yes ☐ No
14. VO Conc.(§264.1083): ☑ <500 ppmw ☐ ≥500ppmw
15. Has waste been treated after point of generation? ☐ Yes ☑ No
16. CERCLA Regulated (Superfund) Waste: ☐ Yes ☑ No
17. Butadiene waste regulated by §63 Subpart XX: ☐ Yes ☑ No
18. Waste contains UHC constituent(s) (§268.48), above a treatment standard, other than those for which the waste exhibits a characteristic. *(If yes, list all UHC's in Section D)*: ☐ Yes ☑ No
19. Waste exempt from definition of "solid waste" or "hazardous waste" *(If yes, list reference 40CFR_____)*: ☐ Yes ☑ No

20. State Waste Codes:	OUTS301H					
21. RCRA Waste Codes:	D008					

22. Source Code: G19 (
23. Form Code: W301 (
24. Management Code: H 132 (USE only)

D. MATERIAL COMPOSITION *(use additional form if necessary)*

Constituent	Units	TCLP	Totals	Range total ≥ 100% Typical	Min	Max
Soil	%	☐	☑	100		
Lead	mg/L	☑	☐	12.7		
2-Butanone	mg/Kg	☐	☑	0.019		
Acetone	mg/Kg	☐	☑	0.10		
Benzene	mg/Kg	☐	☑	0.0054		
Chloroform	mg/Kg	☐	☑	0.045		
Ethylbenzene	mg/Kg	☐	☑	0.0081		
Isopropylbenzene	mg/Kg	☐	☑	0.0047		
Xylenes, Total	mg/Kg	☐	☑	0.032		
Methylcyclohexane	mg/Kg	☐	☑	0.013		
Toluene	mg/Kg	☐	☑	0.021		

E. WASTE CHARACTERISTICS

1. Oxidizer	☐ Yes	☑ No	9. Reactive sulfides _____ ppm	☐ Yes	☑ No
2. Explosive	☐ Yes	☑ No	10. Reactive cyanides _____ ppm	☐ Yes	☑ No
3. Organic peroxide	☐ Yes	☑ No	11. Water/air reactive	☐ Yes	☑ No
4. Shock sensitive	☐ Yes	☑ No	12. Thermally unstable	☐ Yes	☑ No
5. Tires	☐ Yes	☑ No	13. TSCA regulated PCB waste *(control sheet required with shipment)*	☐ Yes	☑ No
6. Pyrophoric	☐ Yes	☑ No	14. Medical/infectious waste	☐ Yes	☑ No
7. Compressed gas	☐ Yes	☑ No	15. Radioactive *(if yes, complete Profile Supplement for Radioactive Waste)*	☐ Yes	☑ No
8. Halogenated organics	☐ Yes	☑ No			

16. Possibility of incidental liquids from transportation? ☐ Yes ☑ No

17. Is waste a solid using the paint filter test? ☑ Yes (solid) ☐ No (not solid)

18. pH: *(if solid, what is pH if mixed with water?)* Range 4 to 10 Typical _____ ☐ ≤ 2 ☑ 2 < 12.5 ☐ ≥ 12.5

19. Flash Point: >212 º F ☐ < 140 º F

20. Is the waste oil bearing waste from Petroleum Refining, Production or Transportation practices? ☐ Yes ☑ No

F. GENERATOR'S CERTIFICATION

☐ Yes ☑ No **I certify this material may be disposed without further treatment.**

I authorize US Ecology to correct inconsistencies on the waste profile form that impact waste management decisions with my oral or written authorization. US Ecology will require re-submittal of the waste profile information if substantial changes are determined necessary. I understand material that does not conform to specifications described in this profile may be rejected by US Ecology unless other contractual arrangements have been agreed to by both parties. I certify, under penalty of law, that I am familiar with this waste stream through analysis and/or process knowledge, and that all information provided is true, accurate, representative and complete, that all known or suspected hazards have been disclosed, and that this form was completed in accordance with the instructions provided.

Print Name	Signature	Title	Date
Edward L. Gunderson	Edward L. Gunderson	Senior Mngr, EHS Legal	1/7/15

US Ecology Texas, Inc.
P.O. Box 307
3277 County Road 69
Robstown, TX 78380

Phone: (800) 242 3209
(361) 387-3518
Fax: (361) 387 0794
(361) 387-0577

US Ecology Texas, Inc.

a *US Ecology Inc.* company

January 14, 2016

GARETT FERGUSON
ARCADIS- US
211 N. FLORENCE STREET STE. 202
EL PASO, TX 79901

RE:

Generator	: **HUNTSMAN INTERNATIONAL, LLC**
Mailing Address	: **3010 OLD MCNUTT ROAD, SUNLAND PARK, NM 88063**
US Ecology WS #	: **090094510-0**
Waste Stream Name	: **LEAD IMPACTED SOIL**
Expiration Date	: **01/11/2017**
Process	: **Stabilization**

Dear Garett Ferguson,

Your Waste Stream Disposal Information form for the above waste stream has been approved.

Under conditions of our operating permit, US Ecology Texas, Inc. is required to inform you that we have all the appropriate permits in order to manage your waste stream. We have received the requisite permits to operate a TSD facility. Our TCEQ permit was renewed on March 25, 2013 and our permit number is HW-50052.

The EPA Uniform Hazardous Waste Manifest (EPA Form 8700-22), appropriate LDR form/certification and Truck Inventory Sheet (if shipping in drums) must accompany each shipment. To obtain manifest, Please visit the EPA website for an approved vendor list

Please notify the Texas facility at (800) 242-3209 at least 48 hours prior to shipment and provide the facility with the following information:

- Date of Shipment
- Date of Delivery
- U.S. EPA Generator ID Number
- Waste Stream Number(s)
- Total quantity of each waste stream number being shipped

Any shipment arriving at the facility without prior scheduling and/or all the appropriate paperwork will be subject to rejection.

Should you have any questions, please contact your US Ecology Texas, Inc. Technical Sales Representative at (800) 242-3209. Please refer to the US Ecology Texas, Inc. waste stream number above when making inquiries.

Sincerely,

Mykayla Schmidgall

MYKAYLA SCHMIDGALL
CUSTOMER SERVICE SPECIALIST

US ecology

WASTE PROFILE FORM

US Ecology Nevada (Beatty) 800-239-3943
US Ecology Idaho (Grand View) 800-274-1516
US Ecology Texas (Robstown) 800-242-3209
US Ecology Michigan (Detroit) 800-396-3265

PROFILE #_____

A. GENERATOR INFORMATION

1. Generator: HUNTSMAN INTERNATIONAL, LLC	☐ Billing information is same ☑ P.O. required for payment
2. Facility Address: 3010 OLD McNUTT ROAD SUNLAND PARK, NM 88063	12. Billing Company: ARCADIS
	13. Billing Address: 630 PLAZA DRIVE
3. Mailing Address: 8600 GOSLING ROAD	14. City/State/Zip: HIGHLANDS RANCH / COLORADO /
4. City/State/Zip: THE WOODLAND / TEXAS / 77381	15. Billing Contact: ACCOUNTS PAYABLE - PO# - LA003185.2015
5. Technical Contact: EDWARD L. GUNDERSON	16. Phone: 720-344-3500 17. Fax:
6. Phone: 281-719-3039 7. Fax:	18. Email: ACCOUNTSPAYABLE.ADMINISTRATION@ARCADIS.COM

8. Generator Status: ☐ CESQG ☐ SQG ☑ LQG

9. EPA ID #: NMR000022293 10. State ID #: D0035

11. SIC Codes:

B. SHIPPING INFORMATION

1. US DOT Shipping name: Non-Hazardous, Non-DOT Regulated

2. Hazard Class: 3. UN/NA #: 4. Packaging Group: 5. RQ:

6. Container Type: ☑ Bulk ☐ Totes ☐ Pallet ☐ Boxes ☐ Drums ☐ Other, Describe:

7. Frequency: ☐ Year ☐ Quarterly ☐ Monthly ☑ 1 time ☐ Other, Describe:

8. Shipment: Size: Tons Quantity: 34

9. Waste Import: ☐ Yes ☑ No *(If yes, complete Waste Import Supplement)*

C. GENERAL MATERIAL & REGULATORY INFORMATION

1. Common name for this waste: Lead Impacted Soil (Non-Hazardous)

2. Process generating the material:
EXCAVATION OF SOILS NEAR A MONITORING WELL THAT SHOWED EVIDENCE OF VISCOUS MATERIAL INSIDE WELL. REMOVAL OF SOIL WAS TO LIMIT FUTURE IMPACTS TO THE SITE. (See ALS Environmental analysis, Work Order: HS15110639, results for bin 942 only)

3. Describe physical appearance and odor of the waste:
BROWN SANDY CLAY SOIL WITH INCLUSIONS OF GRAY CLAYEY SOILS AND MINOR AMOUNTS OF BLACK VISCOUS MATERIAL. STRONG HYDROCARBON ODOR WHEN MATERIAL IS DISTURBED.

4. Odor of the waste: ☐ None ☐ Slight ☑ Strong
5. Physical State: ☐ Liquid ☐ Sludge/Slurry ☑ Solid
6. Describe Color: BROWN
7. Liquid phases: ☐ Single ☐ Double Layer ☐ Multi-layer
8. Knowledge is from: ☑ Lab analysis ☐ MSDS ☐ Process/generator knowledge
9. Waste Type (US Ecology Texas customers only): ☐ N/A ☑ Industrial ☐ Non-Industrial
10. Is the waste restricted under EPA Land Disposal Restrictions (§268)? ☐ Yes ☑ No
11. If LDR "Yes", is waste: ☐ Wastewater ☑ Non-wastewater ☐ Debris (§268.2)
12. Alt. Standards for soil? ☐ Yes ☑ No
13. Is the waste RCRA hazardous waste containing benzene and originating at a Petroleum Refinery (SIC 2911), Chemical Manufacturing Plant (SIC 2800 thru 2899) or Coke by-Product Recovery Plant (SIC 3312)? *(If yes, complete Benzene Waste Operations Supplement Form and Thermal Supplement Form)*: ☐ Yes ☑ No
14. VO Conc.(§264.1083): ☑ <500 ppmw ☐ ≥500ppmw
15. Has waste been treated after point of generation? ☐ Yes ☑ No
16. CERCLA Regulated (Superfund) Waste: ☐ Yes ☑ No
17. Butadiene waste regulated by §63 Subpart XX: ☐ Yes ☑ No
18. Waste contains UHC constituent(s) (§268.48), above a treatment standard, other than those for which the waste exhibits a characteristic. *(If yes, list all UHC's in Section D)*: ☐ Yes ☑ No
19. Waste exempt from definition of "solid waste" or "hazardous waste" *(If yes, list reference 40CFR_____)*: ☐ Yes ☑ No

20. State Waste Codes:	OUTS3011					
21. RCRA Waste Codes:						

22. Source Code: G19 (23. Form Code: W301 (24. Management Code: H 132 (USE only)

D. MATERIAL COMPOSITION *(use additional form if necessary)*

Constituent	Units	TCLP	Totals	Range total ≥ 100% Typical	Min	Max
Soil	%	☐	☑	100		
Lead	mg/L	☑	☐		0.00668	0.0558
2-Butanone	mg/Kg	☐	☑		0	0.013
Acetone	mg/Kg	☐	☑		0.0024	0.064
Benzene	mg/Kg	☐	☑		0.0022	0.0024
Chloroform	mg/Kg	☐	☑		0.0033	0.053
Ethylbenzene	mg/Kg	☐	☑		0.0031	0.0051
Isopropylbenzene	mg/Kg	☐	☑		0.0053	0.0077
Xylenes, Total	mg/Kg	☐	☑		0.013	0.018
Methylcyclohexane	mg/Kg	☐	☑		0.013	0.018
Toluene	mg/Kg	☐	☑		0.0026	0.0053

E. WASTE CHARACTERISTICS

1. Oxidizer	☐ Yes	☑ No	9. Reactive sulfides _____ ppm	☐ Yes	☑ No
2. Explosive	☐ Yes	☑ No	10. Reactive cyanides _____ ppm	☐ Yes	☑ No
3. Organic peroxide	☐ Yes	☑ No	11. Water/air reactive	☐ Yes	☑ No
4. Shock sensitive	☐ Yes	☑ No	12. Thermally unstable	☐ Yes	☑ No
5. Tires	☐ Yes	☑ No	13. TSCA regulated PCB waste *(control sheet required with shipment)*	☐ Yes	☑ No
6. Pyrophoric	☐ Yes	☑ No	14. Medical/infectious waste	☐ Yes	☑ No
7. Compressed gas	☐ Yes	☑ No	15. Radioactive *(If yes, complete Profile Supplement for Radioactive Waste)*	☐ Yes	☑ No
8. Halogenated organics	☐ Yes	☑ No			

16. Possibility of incidental liquids from transportation? ☐ Yes ☑ No

17. Is waste a solid using the paint filter test? ☑ Yes (solid) ☐ No (not solid)

18. pH: *(If solid, what is pH if mixed with water?)* Range 4 to 10 Typical _____ ☐ ≤ 2 ☑ 2 < 12.5 ☐ ≥ 12.5

19. Flash Point: >212 º F ☐ < 140 º F

20. Is the waste oil bearing waste from Petroleum Refining, Production or Transportation practices? ☐ Yes ☑ No

F. GENERATOR'S CERTIFICATION

☑ Yes ☐ No **I certify this material may be disposed without further treatment.**

I authorize US Ecology to correct inconsistencies on the waste profile form that impact waste management decisions with my oral or written authorization. US Ecology will require re-submittal of the waste profile information if substantial changes are determined necessary. I understand material that does not conform to specifications described in this profile may be rejected by US Ecology unless other contractual arrangements have been agreed to by both parties. I certify, under penalty of law, that I am familiar with this waste stream through analysis and/or process knowledge, and that all information provided is true, accurate, representative and complete, that all known or suspected hazards have been disclosed, and that this form was completed in accordance with the instructions provided.

Print Name	Signature	Title	Date
Edward L. Gunderson	Edward L. Gunderson	Sr Mngr, EHS Legal	1/7/15

US Ecology Texas, Inc.
P.O. Box 307
3277 County Road 69
Robstown, TX 78380

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January 14, 2016

GARETT FERGUSON
ARCADIS- US
211 N. FLORENCE STREET STE. 202
EL PASO, TX 79901

RE:

Generator	: **HUNTSMAN INTERNATIONAL, LLC**
Mailing Address	: **3010 OLD MCNUTT ROAD, SUNLAND PARK, NM 88063**
US Ecology WS #	: **090094506-0**
Waste Stream Name	: **LEAD IMPACTED SOIL (NON HAZARDOUS)**
Expiration Date	: **01/11/2017**
Process	: **Direct Landfill**

Dear Garett Ferguson,

Your Waste Stream Disposal Information form for the above waste stream has been approved.

Under conditions of our operating permit, US Ecology Texas, Inc. is required to inform you that we have all the appropriate permits in order to manage your waste stream. We have received the requisite permits to operate a TSD facility. Our TCEQ permit was renewed on March 25, 2013 and our permit number is HW-50052.

The EPA Uniform Hazardous Waste Manifest (EPA Form 8700-22), appropriate LDR form/certification and Truck Inventory Sheet (if shipping in drums) must accompany each shipment. To obtain manifest, Please visit the EPA website for an approved vendor list

Please notify the Texas facility at (800) 242-3209 at least 48 hours prior to shipment and provide the facility with the following information:

- Date of Shipment
- Date of Delivery
- U.S. EPA Generator ID Number
- Waste Stream Number(s)
- Total quantity of each waste stream number being shipped

Any shipment arriving at the facility without prior scheduling and/or all the appropriate paperwork will be subject to rejection.

Should you have any questions, please contact your US Ecology Texas, Inc. Technical Sales Representative at (800) 242-3209. Please refer to the US Ecology Texas, Inc. waste stream number above when making inquiries.

Sincerely,

MyKayla Schmidgall

MYKAYLA SCHMIDGALL
CUSTOMER SERVICE SPECIALIST

US ecology

WASTE PROFILE FORM **PROFILE #**_____

BENZENE WASTE OPERATIONS SUPPLEMENT (BWON 40 CFR Part 61 Subpart FF)
(Former Attachment 4)

This form must be completed for all hazardous waste containing benzene originating at a Petroleum Refinery (SIC 2911), Chemical Manufacturing Plant (SIC 2800 thru 2899) or Coke by-Product Recovery Plant (SIC 3312).

A. GENERATOR INFORMATION

Name of Facility where Waste Originated:	HUNTSMAN INTERNATIONAL, LLC	EPA Generator #:	NMR000022293
Common Name for this Waste:	Lead Impacted Soil		
Process generating the material:	Excavation of soils near monitoring well that showed evidence of viscous material inside well.		

Type of Facility:	☑ Refinery (SIC 2911)	☐ Coke by-products recovery (SIC 3312)	☐ Chemical manufacturing (SIC 2800 thru 2899)
Facility Total Annual Benzene Status (TAB):	☑ < 1 Megagram (2,204 lbs)	☐ ≥1 but <10 Megagram	☐ ≥10 Megagram

Is the waste being transferred to US Ecology for offsite treatment compliance with 40 CFR Part 61.342(f)? ☐ Yes ☑ No*

By indicating "Yes", notice is provided that the waste referenced in this profile is subject to 40 CFR Part 61 Subpart FF (National Emission Standards for Benzene Waste Operations). All shipments of waste under this profile are being transferred to US Ecology for the destruction or removal of benzene in accordance with 40 CFR Part 61.342 (C)(1)(i).

B. WASTE CHARACTERISTICS

The flow-weighted annual average benzene content by weight or process turnaround total concentration of this waste is: 0.10 ppmw

(Benzene concentration data must be total concentration by weight. DO NOT USE TCLP CONCENTRATIONS.)

The weighted average water content is?	☑ ≤10%	☐ >10%
Is the waste Process Unit Turnaround waste?	☐ Yes	☑ No

*Only if you answered "No" for offsite treatment compliance above, please supply the following:

Range of benzene total concentration: 0 to 0.10 ppmw

This waste is classified as:
☐ Process wastewater stream ☐ Product tank drawdown
☐ Landfill leachate ☑ None of the three

C. CERTIFICATION

I certify under penalty of law that I am familiar with the waste stream through analysis and/or process knowledge, and that all information provided is true, accurate, representative and complete, and that this form was completed in accordance with the instructions provided.

Print Name	Signature	Title	Date
Edward L. Saunders	Edward L. Saunders	Senior Mgr, EHS Legal	1/7/15

Revised 11/2014

US ecology

US Ecology, Inc. Land Disposal Restriction Form

Generator: HUNTSMAN INTERNATIONAL, LLC **EPA ID Number:** NMR000022293

Waste Stream or Profile Number: _____ **Manifest Doc. No.** _____ **Line No.** _____

Waste is a: ☐ Wastewater (<1% TSS and TOC) ☑ Non-wastewater ☐ Debris

Notification Frequency: ☐ One Time ☑ Required with Each Shipment

Shipment EPA Waste Codes (from 40 CFR 268.40) D008 _____ _____ _____

_____ _____ _____ _____

UHC's (Underlying Hazardous Constituents 40 CFR 268.48)? ☐ Yes ☑ No

If yes, list: _____

Does a subcategory apply per 40 CFR 268.40? ☐ Yes ☑ No

If yes, list: _____

Constituents requiring treatment in F001-5, F039, debris, and alternate soils? ☐ Yes ☑ No

If yes, list: _____

☐ **See Profile for analysis (if any).**

A. ☐ **Restricted Waste Meets Treatment Standards (40 CFR 268.7(a) (3))**
The restricted waste identified above meets the treatment standards in 40 CFR 268.40 or Alternative LDR treatment standards for contaminated soil 40 CFR268.49 and can be landfill disposed without further treatment.

If applicable, under 268.49, this contaminated soil ☐ does or ☐ does not contain listed hazardous waste and ☐ does or ☐ does not exhibit a characteristic of hazardous waste and complies with the soil treatment standards as provided by 268.49 (c) or the universal treatment standards.

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

B. ☐ **Restricted Waste Treated To Treatment Standards (40 CFR 268.7(b) (l) & 268.7 (b) (2))**
The treatment residue, or extract of such residue, or the restricted waste identified above has been tested to assure that the treatment residues or extract meet all applicable treatment standards in 40 CFR 268.40 and/or performance standards in 40 CFR 268.45.

I certify under penalty of law that I personally have examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

C. ☐ **Restricted Waste Soil treated to alternative standards (40 CFR 268.7 (b) (4))**
I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and believe that it has been maintained and operated properly so as to comply with treatment standards specified in 40 CFR 268.49 without impermissible dilution of the prohibited wastes. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

D. ☐ **Restricted Waste Decharacterized But Requires Treatment For UHC (40 CFR 268.7 (b) (4) (iv))**
I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49 to remove the hazardous characteristic. This decharacterized waste contains Underlying Hazardous Constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

E. ☑ **Restricted Waste Subject To Treatment (40 CFR 268.7(a) (2))**
The restricted waste identified above must be treated to the applicable treatment standards in 40 CFR 268.40, or treated to comply with applicable prohibitions set forth in Part 268.32 or RCRA Section 3004(d) and 268.49 (c).

If applicable, under 268.49, this contaminated soil ☐ does or ☐ does not contain listed hazardous waste and ☐ does or ☐ does not exhibit a characteristic of hazardous waste and is subject to the soil treatment standards as provided by 268.49 (c) or the universal treatment standards.

F. ☐ **Hazardous Debris Subject To Treatment (40 CFR 268.45)**
This hazardous debris identified above must be treated to the alternative treatment standards in 40 CFR 268.45.

I certify and warrant that the information that appears on this form, and appended documents, is true and correct. I have correctly indicated how my waste is to be managed in accordance with 40 CFR 268. My certification is based on personal examination of the information submitted, or is based on my inquiries of those individuals responsible for obtaining the information.

Authorized Signature: Edward L Henderson **Title:** Senior Manager, EH&S Legal **Date:** 1/7/15

UHC and Subcategory list from 40 CFR Part 268.48 and 268.40 available upon request.

Revised 12/2/15

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number 014913762 JJK

GENERATOR

5. Generator's Name and Mailing Address | Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name | U.S. EPA ID Number

7. Transporter 2 Company Name | U.S. EPA ID Number

8. Designated Facility Name and Site Address | U.S. EPA ID Number

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1.					
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name | Signature | Month 01 | Day 25 | Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) | Month | Day | Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name | Signature | Month | Day | Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

GENERATOR'S INITIAL COPY

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number 014[illegible]328 JJK

GENERATOR

5. Generator's Name and Mailing Address — Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1.			11	Y	
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name [illegible] — Signature — Month 12 — Day 26 — Year 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month — Day — Year

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number 014813776 JJK

GENERATOR

5. Generator's Name and Mailing Address — Generator's Site Address (if different than mailing address)

Generator's Phone:

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address — U.S. EPA ID Number

Facility's Phone:

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1.					
	2.					
	3.					
	4.					

14. Special Handling Instructions and Additional Information

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name — Signature — Month — Day — Year

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name — Signature — Month — Day — Year

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

HUNTSMAN

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Attachment C

Photographic Documentation

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
1	11-11-2015

Direction Photo Taken:

Close up

Description:

"Tar" material encountered approximately 1.5 feet deep below ground surface. Appears to be a seam of "tar" material.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
2	11-11-2015

Direction Photo Taken:

Close up

Description:

Close up of "tar" material. All "tar" material was removed and placed into Bin # 942.

HUNTSMAN
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PHOTOGRAPHIC LOG
Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
3	11-11-15

Direction Photo Taken:

Northeast

Description:

Excavating to remove all "tar" material near/at WP-14 well was located.

HUNTSMAN
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PHOTOGRAPHIC LOG
Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
4	11-11-15

Direction Photo Taken:

Close up

Description:

Decontamination station.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
5	11-11-15

Direction Photo Taken:

Close up

Description:

Roll off bin containing excavated material.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
6	11-11-15

Direction Photo Taken:

Northeast

Description:

Excavation area was temporarily fenced for the over nights.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
7	11-12-15

Direction Photo Taken:

Close up

Description:

Two extra roll offs were dropped at the site and used to continue the excavation.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
8	11-12-15

Direction Photo Taken:

Close up

Description:

The source of the contamination was found. A damaged pipe that contained the contaminated material found on well.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
9	11-12-15

Direction Photo Taken:

Southeast

Description:

Continue excavating.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
10	11-12-15

Direction Photo Taken:

East

Description:

Excavation backfilling completed using onsite soils that were stockpiled to the north of the excavation area.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
11	11-12-15

Direction Photo Taken:

Northwest

Description:

Roll off bin sampling using a hand auger. Auger was decontaminated between bin samples.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
12	11-12-15

Direction Photo Taken:

Northwest

Description:

Sampling roll off bins.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
13	1-26-16

Direction Photo Taken:

West

Description:

Bin # 1171 – non-hazardous leaving the site.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
14	1-27-16

Direction Photo Taken:

West

Description:

Bin # 942 – Hazardous leaving the site.

HUNTSMAN

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PHOTOGRAPHIC LOG

Former Huntsman Refinery - WP 14 Limited Excavation

Photo No.	Date:
15	1-27-16

Direction Photo Taken:

West

Description:

Bin # 1168 – non-hazardous leaving the site.

HUNTSMAN

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Attachment D

Utility Clearance Information

ARCADIS

Utilities and Structures Checklist

THIS FORM MUST BE COMPLETED IN ENTIRETY PRIOR TO BEGINNING ANY INTRUSIVE WORK

Project: Huntsman Buckland Refinery
Project Number: LA003185.2015
Form Completion Date: Nov 10, 2015 Form Expiration Date: ~~Nov 25~~ Dec 1, 2015
(15 business days post form completion date)

Pre-Field Work

Required: One Call or "811" notified 48-72 hours in advance of work? #: 20154503 64
Ticket Expiration Date Nov 24, 205 (Review State Requirements)
Utility companies notified during the One Call process ☒ See attached ticket

List any other utilities requiring notification: ☒ None

Private Locator Contacted ☐ Yes ☒ No
Plan private utility clearance subcontractor assignments, areas, required clearance equipment, depth of clearance needed, types of utilities. When possible re-clear 811 markings to confirm utility locations.

Client provided utility maps or "as built" drawings showing utilities? ☒ Yes ☐ No

Field Work - This must be completed on site, by staff who have a minimum of one year of field experience in identifying utilities. Review Check list with PM or designee prior to beginning intrusive work.

List Soil Boring / Well IDs or Excavation Locations applicable to this clearance checklist:
area immediatly around former MP-14 location which has been Id by rebar placed into plug + abandoned location

3 Reliable Lines of Evidence Required Prior to Starting any Subsurface Intrusive Work

☒ One Call/"811" (Reliable as a line of evidence when working in public right of way or easement)
Utility Markings Present: ☐ Paint ☐ Pin flags/stakes ☐ Other ☐ None

☐ Client Provided Maps/Drawings **OR** ☐ Maps/Drawings requested but not provided
☒ Client Clearance Name(s)/Affiliation(s)
☒ Interview(s): Name(s)/Affiliation(s) ED GUNDERSON - Huntsman Int'l, LLC

Did person(s) interviewed indicate depths of any utilities in the subsurface?
☐ Yes, depths provided: ☐ Did not know or refused to answer
Additional Comments:

☒ Site Inspection (**Complete Page 2 & Photo Document Marked Utilities & Utility Structures**)
☐ Public Records / Maps / Asbuilits
☐ Private Locator: (Name and Company)
☐ Ground Penetrating Radar (GPR)
☐ Radiofrequency (RFLoc)
☐ Electromagnetic (EM)
☐ Metal Detector

Soft Dig Methods
☐ Termination Depth _____ft. bgs
☐ Potholing / Vacuum Extraction
☐ Air-Knife ☐ Hydro-Knife
☐ Probing
☐ Hand Auguring

Tips for Successful Utility Location:
1. Don't forget to look up
2. Be on site with Private Utility Locators
3. Ask Private Locators to "confirm" other's markings
4. Select alternate/backup locations during clearance process
5. Mark out all known utilities. Leave nothing to question
6. No hammering - no pickaxes - no digging bars - no shortcutting
7. No excessive turning or downward force of hand augers/shovels
8. Utilities may run in or directly under asphalt/concrete

☐ Other:
☐ Marine Locator: (Name and Company)

ARCADIS Utilities and Structures Checklist

During the site inspection look for the following: **("YES" requires additional investigation and the utility must be marked properly prior to beginning subsurface intrusive work)**:

Site Inspection	Utility Color Codes		Present
a) Natural gas line present (evidence of a gas meter)?	Yellow	☐ Yes	☑ No
i) Feeder Lines to buildings or homes?		☐ Yes	☑ No
b) Evidence of electric lines:	Red		
i) Conduits to ground from electric meter or along wall?		☐ Yes	☑ No
iii) Conduits from power poles running into ground?		☐ Yes	☑ No
ii) Light poles, electric devices with no overhead lines?		☐ Yes	☑ No
iii) Overhead electric lines present? (See Section l)		☑ Yes	☐ No
c) Evidence of sewer drains:	Green		
i) Restrooms or kitchen on site?		☐ Yes	☑ No
ii) Sewer cleanouts present?		☐ Yes	☑ No
iii) Combined sewer /storm lines or multiple sewer lines?		☐ Yes	☑ No
d) Evidence of water lines:	Blue		
i) Water meter on site or multiple water lines?		☐ Yes	☑ No
ii) Fire hydrants in vicinity of work?		☐ Yes	☑ No
iii) Irrigation systems? (Sprinkler heads, valve boxes, controls in building)		☐ Yes	☑ No
e) Evidence of storm drains:	Green		
i) Open curbside or slotted grate storm drains		☐ Yes	☑ No
ii) Gutter down spouts going into ground		☐ Yes	☑ No
f) Evidence of telecommunication lines:			
i) Fiber optic warning signs in areas?		☐ Yes	☑ No
iv) Aboveground cable boxes or housings or wires in work area?		☐ Yes	☑ No
g) Underground storage tanks:			
i) Tank pit present, tank vent present?		☐ Yes	☑ No
ii) Product lines running to dispensers/buildings?		☐ Yes	☐ No
h) Do utilities enter or exit existing structures/buildings?			
If Yes, confirm the utility markings outside of structure/building match up.		☐ Yes	☐ No
i) Proposed excavation marked in white?	White	☑ Yes	☐ No
j) Unclassed utilities / anomalies marked in pink?	Pink	☐ Yes	☑ No
k) **Overhead** Utilities/Communication Lines - **Look Up**:			
i) Overhead electrical conduit, pipe chases, cable trays, product lines?		☑ Yes	☐ No
ii) Overhead fire sprinkler system?		☐ Yes	☑ No
l) **Overhead** Power lines in or near the work area:			
i) < 50 kV within 10 ft. of work area?		☐ Yes	☐ No
ii) >50 - 200 kV within 15 ft. of work area?		☐ Yes	☐ No
iii) >200-350 kV within 20 ft. of work area?		☐ Yes	☐ No
iv) >350-500 kV within 25 ft. of work area?		☐ Yes	☐ No
v) >500-750 kV within 35 ft. or work area?		☐ Yes	☐ No
vi) >750-1000 kV within 45 ft. of work area?		☐ Yes	☐ No
m) Other:			
i) Evidence of linear asphalt or concrete repair?		☐ Yes	☑ No
ii) Evidence of linear ground subsidence or change in vegetation?		☐ Yes	☑ No
iii) Unmarked manholes or valve covers in work area?		☐ Yes	☑ No
iv) Warning signs ("Call Before you Dig", etc.) on or adjacent to site?		☐ Yes	☑ No
v) Utility color markings not illustrated in this checklist?	i.e. Purple	☐ Yes	☑ No
n) Has the Utilities & Structures Checklist been reviewed by the PM or Designee		☒ Yes	☐ No

Streetlines overhead - Unknown Voltage but greater than 15 feet from excavation area.

PM or Designee Name: G. Ferguson

Name and Signature of person completing the checklist: Garett Ferguson

Date: Nov 10, 2015

Do not perform **mechanized** intrusive work within 30 inches of a utility marking without receiving pre-approval by Corporate H&S .

From: eticket@nm811.org
To: Ferguson, Garett
Subject: DO NOT REPLY: Request 2015450364
Date: Monday, November 2, 2015 2:11:52 PM

New Mexico One Call
Locate Request Confirmation Header Code: STANDARD LOCATE
Request Type:
Ticket No: 2015450364 Seq. No: 0
Update of:
Original Call Date: 11/02/2015 Time: 02:05:04 PM OP: 240
Transmit Date: 11/02/2015 Time: 02:11:39 PM
Work to Begin Date: 11/04/2015 Time: 02:05:00 PM

Company: ARCADIS
Contact Name: GARETT FERGUSON Contact Phone: (915)433-1761
Alternate Contact: Alternate Phone:
Best Time to Call: Fax No:
Cell Phone: (915)433-1761 Pager No:
Email: garett.ferguson@arcadis.com

State: NM County: DONA ANA City: SUNLAND PARK
Address: , BRICKLAND RD
To Address:
Nearest Intersecting Street: MCNUTT RD (NM-273)
2nd Intersecting Street:
Subdivision:
Latitude: 31.79605300 Longitude: -106.53542700
Zip Code:
Grid:
Township: 29S Range: 04E Section 1/4: 09 SW

Location of Work: FROM ANAPRA RD AND BRICKLAND ROAD TRAVEL SOUTH ON BRICKLAND TO ENTRY GATE APPROXIMATELY 0.5MI, FROM ANAPRA RD TO RIGHT FORK IN RD. DIG SITE IS LOCATED WITHIN FENCE ALONG EAST FENCELINE. 100' X 100' AREA. SPOT AREAS MARKED IN WHITE.

Remarks: PLEASE CALL GARETT FERGUSON AT 915-433-1761 FOR ACCESS AND DIRECTION TO EXCAVATION LOCATION AS FENCE IS LOCKED - HAZARDS - POSS. SNAKES/BEES
Type of Work: SOIL REMEDIATION
Private Property: Y Street: Overhead Lines: Blasting:
Easement: Mechanical Boring: Premarked: Y
Work Being Done For: CLIENT
The following utility owners have been notified:
QEST NML3 EP24 ELEL ATT1
COSP TWCAB

IMPORTANT CONFIRMATION NOTICE

Your fax request has been received and processed. It is your

responsibility to review the information provided on this faxback confirmation ticket and ensure it has been correctly interpreted from your request. Notify us immediately of any corrections or errors. Acceptance of this faxback confirmation ticket means you accept responsibility for the accuracy of the information contained in the ticket and you agree to indemnify New Mexico One Call Systems, Inc. of all liability, claims, fees, or damages, including reasonable attorney fees arising from or resulting from the use of the information provided on this confirmation ticket.

New Mexico Law requires you to wait two working days from the date and time of this confirmation notice before you begin excavation. This request is valid for ten working days. Only the facility owners listed on this ticket will be notified.
You can check the Locate Status of this ticket and request other tickets by visiting the our website at www.nmonecall.org.

Caller Info

Contractor code: 61406

Caller

Caller name: GARETT FERGUSO
Title: PROJECT GEOLOGIST
Alternate contact:
Phone #:

Communication

Phone #: (915) 433-1761
Fax #:
Cell phone #: (915) 433-1761
Pager:
Email: garett.ferguson@arcadis.com
Best time to call back:

Contractor

Company name: ARCADIS
Address: 401
Suite: 400
Street: EAST MAIN
Street type: ST
Direction:
City: EL PASO
State: TX
Zip code: 79901
Type: CONTRACTOR

Ticket #	City or County	Address	Street/Well/Location Name	Intersection 1	Intersection 2
Notifications					
2015450364	SUNLAND PARK ,DONA ANA M		MCNUTT RD (NM-273)	ANAPRA RD	BRICKLAND RD
Suspended					