AP - 001

2012 AGWMR

03/13/2013

HUNTSMAN

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March 13, 2013

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

RE: Submission of the 2012 Annual Groundwater Report for the
Former Brickland Refinery Site
Sunland Park, New Mexico
Huntsman Corporation
Case No. AP-01

Dear Mr. von Gonten:

Enclosed is the 2012 Annual Groundwater Report for the Former Brickland Refinery Site. As agreed upon on February 11, 2003, this report is being submitted on or before April 1 for the previous year.

Please contact me at 281-719-3039 should you have questions or need additional information.

This report is also being sent to the District 2 office in Artesia.

Sincerely,

Edward L. Gunderson

Edward L. Gunderson, P.E.
Senior Manager, EHS Legal and Regulatory Compliance
Huntsman International LLC

Enclosure
cc: NMOCD District 2 – Artesia
Lon Tullos – Huntsman EHS Library

cc w/o enclosure: Jennifer Warfield - ERM

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Huntsman International, LLC

2012 Annual Groundwater Monitoring Report: *Former Brickland Refinery*

March 13, 2013

Project No. 0161236
Sunland Park, New Mexico

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TABLE OF CONTENTS

APPENDICES

TABLE OF CONTENTS (CONT'D)

List of Tables

List of Figures

EXECUTIVE SUMMARY

This 2012 Annual Groundwater Monitoring Report documents the results of two semi-annual groundwater monitoring events conducted at the former Brickland Refinery site in Sunland Park, New Mexico. The 2012 semi-annual groundwater monitoring events were conducted in June/July (June 19-21 and July 20), and December (December 11-13). This report contains summaries of groundwater elevation and analytical data from the 2012 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. In accordance with the Abatement Plan, June and December sampling events include water level and product thickness measurements in all monitor wells and well points, as well as analysis of benzene, toluene, ethylbenzene, and xylene (BTEX) for all sampled wells. In addition, the June sampling event also includes analyses for polynuclear aromatic hydrocarbons (PAHs) and lead.

During the 2012 monitoring events, samples were collected from:

- the five off-site wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S),
- the four on-site wells (MW-4, MW-7, MW-14, and MW-15),
- the three on-site wells that previously contained O-Sox (MW-5, MW-8, and MW-10), and
- the two surface water river samples (one upstream from the site, north of MW-1, (River Upstream) and one immediately downstream, south of MW-9S (River Downstream)).

Oxygen-releasing compound socks (EHC-O O-Sox™ or O-Sox) were used during 2011 and the first half of 2012 to enhance natural attenuation. An initial set of O-Sox were placed in wells MW-5, MW-8, and MW-10 on March 10, 2011 and replaced quarterly. The trial or "pilot test" of this technology was terminated and O-Sox were removed from MW-10 in December 2011 and from MW-5 and MW-8 in June 2012.

The laboratory reported benzene concentrations were above the New Mexico Water Quality Control Commission (NMWQCC) standard for samples collected from MW-5, MW-8, and MW-10 during the June/July and December 2012 events. No other BTEX constituents were reported above the standards, and no BTEX constituents were reported in River Upstream or Downstream samples for either June or December.

The laboratory reported Total PAHs were below the NMWQCC standard for all samples collected during the June 2012 monitoring event. PAH analysis was not required for the December event.

The laboratory reported lead concentrations were below the NMWQCC standard for all samples collected during the June 2012 monitoring event. Lead analysis was not required for the December event.

The hydraulic gradient beneath the former Brickland Refinery varies slightly across the site, and in response to river stage. Annually, the gradient varies from approximately 0.0006 (July) to 0.0009 (December) foot/foot. The groundwater flow direction is generally to the southeast, parallel to the river.

Light non-aqueous phase liquid (LNAPL) was measured in MW-10 during June and December 2012 (thickness of 0.11 foot and 0.04 foot, respectively). Trace amounts of LNAPL (0.01 ft or less) were found in WP-2 and WP-33 in December 2012. LNAPL was not found in any other wells during the 2012 monitoring events.

Based on the results of ongoing monitoring, Huntsman recommends the following actions:

- Sampling should continue in accordance with the Abatement Plan.
- LNAPL removal should continue in 2013 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 after removal of O-Sox bioremediation amendments.

1.0 INTRODUCTION

1.1 BACKGROUND

The 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 as a petroleum refinery, producing both gasoline and jet fuel. The site was closed and the plant dismantled in 1958. Between 1964 and 1989, the site was leased 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 (20NMAC 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 (s70-2-12.8 (22) NMSA 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 since no free-phase product was removed from MW-10 in 2006, 2007 or 2008. The site layout and monitoring well and sampling locations are shown on Figure 2.

1.2 SCOPE OF SERVICES

ERM performed semi-annual groundwater monitoring at the subject site in June/July and December 2012. 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 (NMED), and Environmental Protection Agency (EPA) regulations, procedures, and guidelines. The following items were included in the semi-annual 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 twelve on-site monitoring wells, thirteen on-site well points, and seven off-site monitoring wells. Historical groundwater elevations for the monitoring wells are provided in Table 2 and groundwater elevation contour maps for the 2012 monitoring events are depicted in Figures 3 and 4.

- Thirteen well points and one monitoring well (MW-10) were monitored for the presence of LNAPL, and a summary of the LNAPL thicknesses is graphed in Figure 5 and also included in Table 6.
- 2012 groundwater sampling was conducted in each of the five required off-site monitoring wells (MW-3S, MW-3D, MW-6S, MW-6D, and MW-9S) in June and December. In addition, during June 2012, sampling was conducted at four on-site wells per the Abatement Plan: MW-4, MW-7, MW-14, and MW-15. Analytical testing for these samples included BTEX, polynuclear aromatic hydrocarbons (PAH), and lead (using US EPA Test Methods 8021B, 8270C, 7470, and 6020, respectively) during the June monitoring event, and BTEX only for the December monitoring event.
- Monitoring wells MW-5, MW-8, and MW-10 were sampled and analyzed for only benzene, toluene, ethylbenzene, and xylene (BTEX) as part of the June and December sampling events (samples were actually collected a few weeks later, on July 20, 2012).
- Surface water grab samples were collected from the Rio Grande during each semi-annual monitoring event for laboratory analytical testing. One sample (River Upstream) was collected from the upstream end of the site, north of MW-1, and the other sample (River Downstream) was collected from the downstream end of the site, south of MW-9S.

2.0 *GROUNDWATER ELEVATION, HYDRAULIC GRADIENT AND FLOW DIRECTION*

The hydraulic gradient beneath the former Brickland Refinery varies slightly across the site, and in response to river stage. In June 2012 the gradient was approximately 0.0006 foot/foot. The groundwater flow direction is generally to the southeast, parallel to the river. The hydraulic gradient in December 2012 was calculated to be approximately 0.0009 foot/foot. The groundwater flow direction in December is generally to the southeast paralleling the river. A slight groundwater mound, present at well MW-16 (and associated well point WP-31), is present at the southern end of the site. Elevated water levels at MW-16 may be due a plugged or poorly developed well screen as this well does not appear to respond to seasonal fluctuations in a similar manner to other on-site wells.

Historical groundwater elevations for the monitoring 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 product at discrete depth and the screened intervals do not correlate with the monitoring well screens. Groundwater elevation contour maps for the June and December 2012 monitoring events are depicted in Figures 3 and 4, respectively.

Groundwater levels in the monitoring wells are influenced by the stage of the Rio Grande River bordering the site. Due to observed seasonal fluctuations in the river, water levels in the monitoring wells may vary as much as two feet over the course of a year. Monitoring of groundwater elevation since June of 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.

3.0 *LNAPL PRODUCT 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 monitoring wells was evaluated visually during gauging of water levels with an electronic water level meter. Measureable thicknesses of LNAPL were measured at MW-10 in June and December 2012 (0.11 ft and 0.04 ft, respectively). Trace amounts of LNAPL (0.01 ft or less) were detected by the oil-water interface probe at WP-2 and WP-33 in December 2012. Recent and historical measurements, dating back to June 2003, are graphed in Figure 5 and listed in Table 6.

LNAPL Thickness maps were not prepared for this report because only two wells contained measurable amounts of LNAPL.

3.2 *REMOVAL AND DISPOSAL OF LNAPL PRODUCT*

Historically, a total of approximately 235 gallons of LNAPL has been removed from MW-10 since December 1998, when the product recovery system was installed. When LNAPL yields were no longer recovered in measurable amounts during 2006 and 2007, 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 June 2012 sampling event, LNAPL thickness of 0.11 ft was measured in MW-10; this is approximately half the thickness measured in December 2011. LNAPL removal from MW-10 during June 2012 was accomplished by bailing the well dry. Approximately 7.5 gallons (groundwater with LNAPL) was removed in total. The well was then left to recharge for 30 minutes and re-gauged; no additional LNAPL was found in MW-10.

During the December 2012 sampling event, LNAPL thickness of 0.04 ft was measured; this is less than half the thickness measured in June 2012. LNAPL removal from MW-10 during December 2012 was accomplished through pumping in order to capture the thin layer. A peristaltic pump and ¼-inch polyethylene tubing was used to pump the layer of product by positioning the tip of the tubing at the liquid surface. Pumping was continued until clear water was consistently observed and no additional LNAPL was being recovered. Approximately one gallon of liquid was removed from MW-10 in December, which consisted of groundwater and LNAPL.

In June and December, removed groundwater with LNAPL was containerized on-site in a 55-gallon drum for future disposal.

4.0 SAMPLE COLLECTION AND LABORATORY ANALYTICAL TESTING PROCEDURES

4.1 FLUID LEVEL MEASUREMENTS AND DECONTAMINATION

During groundwater and LNAPL thickness measurements described in Sections 2 and 3, the oil-water interface probe and electronic water level meter were 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 double-rinsing with water.

4.2 CALIBRATION OF THE MULTI-PROBE WATER ANALYZER

The multi-probe analyzer was calibrated prior to use at the former Brickland Refinery site. Each calibration was carried out in accordance with the equipment manufacturer's procedures and recommendations. Date, time, calibration readings, and the method of calibration were recorded on the Field Daily Activity Logs and Field Notes presented in Appendix A.

4.3 WELL PURGING AND FIELD PARAMETER MEASUREMENTS

The monitoring wells were micropurged prior to sampling. Micropurging consists of removing small volumes of groundwater at very low pumping rates until certain physiochemical 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, redox potential, and turbidity were documented on the Low Flow Sampling Sheets provided in Appendix A. Micropurging of each well was continued until three consecutive readings for three field parameters (dissolved oxygen, redox potential, and turbidity) stabilized within 10% 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 Low Flow Sampling Sheet for each well. The purged water was containerized for disposal.

Approximately 1.25 to 3.5 gallons were removed from each well with pumping rates of approximately 0.1 to 0.4 liter per minute. Field data collected during the purging of each well is provided in Appendix A. Groundwater odor, color, and other physically apparent characteristics were also documented. Monitor well integrity was also documented (see the Low Flow Sampling Sheets provided in Appendix A).

Nine wells are instrumented with dedicated pumps (Micropurge Bladder Pumps). Wells not equipped with dedicated pumps were purged 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 29.25 gallons of water were purged from the sampled monitoring wells during the June 2012 monitoring event. Approximately 23.75 gallons of water were purged from the sampled wells during the December 2012 monitoring event. The purged water collected during these monitoring events will be collected by Safety-Kleen for subsequent non-hazardous disposal at an approved facility.

4.4 *GROUNDWATER SAMPLE COLLECTION*

Samples were collected for laboratory analysis in the order of volatilization sensitivity of the analytical parameters, (first, volatile organics; second, polynuclear aromatic hydrocarbons; and third, metals). All samples were labeled with the sampling location, date, time, and testing requirements on self-adhering labels provided by the laboratory.

4.4.1 *BTEX*

The groundwater samples were analyzed by US EPA Method 8021B for the following volatile organic compounds (VOCs): BTEX. The three VOC sample containers were 40 milliliter (mL) glass vials that contained a pre-measured amount of hydrochloric acid (HCl), prepared by the laboratory. The HCl is a preservative, and sample containers for VOCs were not rinsed or allowed to overflow during the collection of samples. 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.

4.4.2 *PAHs*

Wells sampled in the June 2012 monitoring event were analyzed by US EPA Method 8270C for the presence of PAHs. Sample containers for PAHs were two 1-liter amber glass bottles with no preservative. Water was collected from the well via tubing directly into the sample container until filled to the neck.

4.4.3 *Metals*

Wells sampled in the June 2012 monitoring event were analyzed by US EPA Method 6020 for lead. Sample bottles were 500 mL plastic bottles that contained a pre-measured amount of nitric acid (HNO_3) prepared in the laboratory. The HNO_3 is a preservative and sample containers for metals were not rinsed before or allowed to overflow during sample collection.

4.5 *SURFACE WATER SAMPLING*

Surface water samples from the Rio Grande were collected during each semi-annual monitoring event for laboratory analytical testing. One sample (River Upstream) was collected from the upstream end of the site, north of MW-1, and the other sample (River Downstream) was collected from the downstream end of the site, south of MW-9S. The samples were subjected to the same group of analytical testing listed previously for the groundwater samples. Surface water grab samples were collected by submerging a decontaminated Teflon® dipper into the river. The dipper was decontaminated between sampling sites with Liquinox, a non-phosphate detergent followed by a double rinse with distilled water. Sampling protocols outlined in the Monitoring and Sampling Protocol was strictly adhered to during the sampling process.

4.6 *FIELD QUALITY ASSURANCE / QUALITY CONTROL*

The Field Quality Assurance/Quality Control (QA/QC) program includes collection of field blanks, equipment blanks, trip blanks, and duplicate samples. Descriptions of the QA/QC samples and evaluation of QA/QC results for 2012 are presented below.

4.6.1 *Field Blanks*

Field blanks were used to determine potential absorption of volatile organics from the air into the water samples. The blanks for volatile organics were collected by filling three 40 mL glass vials with distilled water. The field blanks were analyzed for BTEX.

BTEX constituents were not detected in the field blanks.

4.6.2 *Equipment Blanks*

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

BTEX constituents were not detected in the equipment blanks.

4.6.3 *Trip Blanks*

The trip blank is used to detect and quantify potential organic chemical artifacts occurring in the samples which originate from either the sample containers or the de-ionized water comprising the blank. One bottle set for each ice chest was filled with de-ionized water by the laboratory prior to field mobilization. These bottles were transported to the sampling location and returned to the laboratory in the ice chests used to transport groundwater and surface water samples. The trip blanks were analyzed for BTEX.

BTEX constituents were not detected in the trip blanks.

4.6.4 *Duplicate Samples*

One duplicate sample was collected during each of the semi-annual monitoring events. The duplicate samples collected during the June and December monitoring events were collected from monitor wells MW-6S and MW-5, respectively.

Duplicate sample results from June at MW-6S had no variation with the original sample. Non-detect analytical results for all constituents in the duplicate sample were consistent with non-detect original results in MW-6S.

Duplicate sample results from December at MW-5 had some variation with the original sample. The duplicate sample results for benzene and xylenes were within 20% difference of the original MW-5 results. Ethylbenzene and toluene were detected in the MW-5 duplicate sample; however, these were not detected in the original MW-5 sample. The ethylbenzene result was flagged as below quantification limit by the laboratory in the duplicate sample. Ethylbenzene and toluene detected in the MW-5 duplicate were detected below the NMWQCC standards.

4.7 *SAMPLE SHIPPING AND CHAIN-OF-CUSTODY RECORDS*

The water samples collected during the monitoring events were placed in ice-filled coolers immediately after collection and shipped to ALS Laboratories in Houston, Texas for analysis. In each event, chain-of-custody (COC) 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 COC forms are provided in Appendix B.

5.0 GROUNDWATER ANALYTICAL RESULTS

5.1 BTEX

In accordance with the Abatement Plan, BTEX concentrations are measured semi-annually during the sampling events. Benzene was reported in concentrations above the NMWQCC standard of 10 µg/L in samples from wells MW-5, MW-8, and MW-10 in June/July and December 2012. Benzene concentrations detected at MW-5, MW-8, and MW-10 in December 2012 are greater than concentrations reported in June 2012. This increase may be attributed to June 2012 discontinuation of O-Sox use at these wells (see Section 6.0 for additional information on O-sox removal). Benzene was detected below the NMWQCC standard in MW-4 in June 2012.

Toluene was detected in MW-8 and MW-10 in July, and in estimated concentrations in MW-10 in December. Ethylbenzene was detected in estimated concentrations in MW-8 and MW-10 in July 2012. Total xylenes were detected in MW-5 and MW-10 in July and December 2012, and detected as estimated concentrations at wells MW-6S and MW-7 in December. All detected levels of toluene, ethylbenzene and total xylenes are below the NMWQCC standards.

No other BTEX constituents were reported above the standards, and no BTEX constituents were reported in River Upstream or Downstream samples for either June or December. Laboratory results for BTEX analyses are shown in Table 3.

5.2 PAHS

Samples were analyzed for PAHs in June 2012 and concentrations were reported below the NMWQCC standard of 30 µg/L for Total PAHs. Laboratory results for PAH analyses are shown in Table 4.

5.3 METALS

On June 19, 2009, NMOCD approved a change to the sampling program for metals, removing all metals, except lead, from the list of analytes. Samples were analyzed for lead in June 2012 and concentrations were reported below the NMWQCC standard of 0.05 mg/L. Laboratory results for lead analyses are shown in Table 5.

6.0 *REMEDIATION PERFORMANCE*

Bioremediation Pilot Testing

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

An initial set of O-Sox were placed in wells MW-5, MW-8, and MW-10 on March 10, 2011. O-Sox replacement occurred in June 2011, September 2011 and December 2011. Due to measurement of 0.20 feet of LNAPL in MW-10 in December 2011, the O-Sox sleeve at this well was removed and not replaced; however, O-Sox replacement did occur as planned at MW-5 and MW-8. During the June 2012 sampling event, the O-Sox were removed from MW-5 and MW-8 and have not been replaced. O-Sox use is discontinued while LNAPL continues to be observed at the site, as described in Section 3.1.

Following the removal of O-Sox, the benzene concentrations in these wells have subsequently increased; this rebound will continue to be evaluated during 2013 monitoring.

Product Recovery

The LNAPL product recovery system was shut down and disconnected in 2008. No measureable LNAPL was found in MW-10 during 2009 and 2010. Due to the new measurement of LNAPL in MW-10 (0.20 ft thickness) from December 2011, LNAPL removal was re-initiated during 2012 with quarterly bailing or pumping activities at MW-10. While only two removal events took place in 2012; quarterly site visits for LNAPL removal are planned for 2013. LNAPL removal was completed in June and December 2012 for MW-10 as described in Section 3.2.

7.0 *CONCLUSIONS*

Overall, the reported concentrations in groundwater appear to be stable or attenuating. During the 2012 reporting period, only benzene concentrations exceed NMWQCC standards; PAHs and lead continue to be analyzed and are reported below NMWQCC standards. Benzene concentrations exceed NMWQCC standards at MW-5, MW-8, and MW-10; a bioremediation stimulant (O-Sox) has been utilized during the first half of 2012 as a pilot study to enhance degradation of dissolved phase benzene at these three wells. Review of laboratory results show an increase in benzene concentrations in MW-5, MW-8, and MW-10 that is likely a rebound effect after removal of O-Sox.

2012 sampling confirmed that residual LNAPL is present on the site. LNAPL was measured in the MW-10 monitoring well and trace amounts were found in WP-2 and WP-33 during the 2012 monitoring events, suggesting residual LNAPL is present in the vadose zone. The recurrence of measureable LNAPL may be attributed to the smear zone caused by seasonal groundwater fluctuations at the site. The smear zone refers to the area where LNAPL occurred and was then smeared across the soil when the water table fluctuated between historic high and low water table elevations.

8.0 *RECOMMENDATIONS*

The following recommendations are proposed for the remediation system and monitoring operations at the former Brickland Refinery.

- Sampling should continue in accordance with the Abatement Plan.
- LNAPL removal should continue in 2013 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 after removal of O-Sox bioremediation amendments.

Tables

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

Table 1
Brickland Refinery
Water Sampling and Purging Methods

Well No.	Sample Date	Purging Method	Sampling Method	Purge Volume	Laboratory Analytes
MW-3S	6/19/2012	Micropurge	Dedicated Bladder Pump	Approximately 3.5 gallons	BTEX, PAHs, Lead
	12/11/2012	Micropurge	Dedicated Bladder Pump	Approximately 2.5 gallons	BTEX
MW-3D	6/19/2012	Micropurge	Dedicated Bladder Pump	Approximately 2 gallons	BTEX, PAHs, Lead
	12/11/2012	Micropurge	Dedicated Bladder Pump	Approximately 2.5 gallons	BTEX
MW-4	6/20/2012	Micropurge	Dedicated Bladder Pump	Approximately 2 gallons	BTEX, PAHs, Lead
	12/13/2012	Micropurge	Dedicated Bladder Pump	Approximately 1.5 gallons	BTEX
MW-5	7/20/2012	Micropurge	Peristaltic Pump	Approximately 2 gallons	BTEX
	12/13/2012	Micropurge	Peristaltic Pump	Approximately 3 gallons	BTEX
MW-6S	6/21/2012	Micropurge	Dedicated Bladder Pump	Approximately 3 gallons	BTEX, PAHs, Lead
	12/12/2012	Micropurge	Dedicated Bladder Pump	Approximately 1.5 gallons	BTEX
MW-6D	6/21/2012	Micropurge	Dedicated Bladder Pump	Approximately 3 gallons	BTEX, PAHs, Lead
	12/12/2012	Micropurge	Dedicated Bladder Pump	Approximately 1.5 gallons	BTEX
MW-7	6/20/2012	Micropurge	Dedicated Bladder Pump	Approximately 2 gallons	BTEX, PAHs, Lead
	12/12/2012	Micropurge	Dedicated Bladder Pump	Approximately 1.75 gallons	BTEX
MW-8	7/20/2012	Micropurge	Peristaltic Pump	Approximately 1.25 gallons	BTEX
	12/13/2012	Micropurge	Peristaltic Pump	Approximately 1.5 gallons	BTEX
MW-9S	6/20/2012	Micropurge	Dedicated Bladder Pump	Approximately 3 gallons	BTEX, PAHs, Lead
	12/12/2012	Micropurge	Dedicated Bladder Pump	Approximately 3.5 gallons	BTEX
MW-10	7/20/2012	Micropurge	Peristaltic Pump	Approximately 2 gallons	BTEX
	12/13/2012	Micropurge	Peristaltic Pump	Approximately 2 gallons	BTEX
MW-11	--	--	--	--	--

Table 1
Brickland Refinery
Water Sampling and Purging Methods

Well No.	Sample Date	Purge Method	Sampling Method	Purge Volume	Laboratory Analytes
MW-14	6/20/2012	Micropurge	Dedicated Bladder Pump	Approximately 3 gallons	BTEX, PAHs, Lead
	12/13/2012	Micropurge	Dedicated Bladder Pump	Approximately 1.5 gallons	BTEX
MW-15	6/21/2012	Micropurge	Dedicated Bladder Pump	Approximately 2.5 gallons	BTEX, PAHs, Lead
	12/12/2012	Micropurge	Dedicated Bladder Pump	Approximately 1 gallon	BTEX
MW-17	--	--	--	--	--
River Upstream	6/19/2012	NA	Teflon Dipper	NA	BTEX, PAHs, Lead
	12/11/2012	NA	Teflon Dipper	NA	BTEX
River Downstream	6/19/2012	NA	Teflon Dipper	NA	BTEX, PAHs, Lead
	12/11/2012	NA	Teflon Dipper	NA	BTEX
Total volume purged during semi-annual monitoring event in June/July 2012:					29.25 gallons
Total volume purged during annual monitoring event in December 2012:					23.75 gallons
Total volume purged during semi-annual and annual monitoring events:					53 gallons

Notes:

--* = Not sampled during an odd-numbered year.

NA = Not applicable

Table 2
Brickland Refinery
Monitoring Well Groundwater Elevations (Feet, MS

Well ID	TOC	6/18/2003	12/16/2003	6/16/2	7/7/2010	6/20/2011	12/13/2011	6/19/2012	12/11/2012
MW-1	3730.57	3725.55	3723.69	3725.	3724.08	3726.27	3723.93	3725.83	3724.01
MW-2	Plugged	Plugged 6/99	Plugged 6/99	Plugg 6/9	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-3S	3730.00	3724.65	3722.69	3724.	3723.15	3725.35	3723.05	3724.86	3723.03
MW-3D	3730.00	3724.57	3722.61	3724.	3723.07	3725.37	3722.93	3724.96	3722.91
MW-4	3728.86	3724.87	3722.88	3724.	3723.41	3725.51	3723.26	3725.11	3723.20
MW-5	3729.70	3724.91	3722.85	3724.	3723.54	3725.50*	3722.13*	3724.91*	3723.27
MW-6S	3730.65	3724.4	3722.38	3724	3722.83	3725.11	3722.69	3724.70	3722.71
MW-6D	3730.62	3724.36	3722.33	3724.	3722.85	3725.06	3722.76	3724.67	3722.70
MW-7	3728.96	3724.76	3722.69	3724.	3723.26	3725.43	3723.04	3724.99	3723.08
MW-8	3729.22	3724.67	3722.63	3724.	3723.22	3725.25*	3721.89*	3724.76*	3723.05
MW-9S	3730.01	3724.04	3722.02	3723.	3723.23	3725.16	3722.32	3724.33	3722.49
MW-9D	3730.08	Dry	Dry	Dry	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05	Plugged 7/05
MW-10	3732.54	3725.67	3722.31	3724.	3722.91	3724.87	3722.21	3724.34	3722.55
MW-11	3731.40	3724.51	3721.17	3724.	3723.17	3724.95*	3722.94*	3724.64	3722.98
MW-12	3730.35	3725.93	3724.09	3725	3724.52	3726.70	3724.79	3726.21	3724.33
MW-13	3732.36	Plugged 6/99	Plugged 6/99	Plugg 6/9	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99	Plugged 6/99
MW-14	3730.46	3725.3	3722.79	3724.	3723.58	3725.49	3723.44	3725.09	3724.84
MW-15	3738.62	3724.35	3722.38	3724.	3723.26	3724.99	3723.15	3724.63	3722.81
MW-16	3736.78	3724.17	3722.14	3724.	3722.78	3724.87	3724.76	3724.64	3724.71
MW-17	3731.98	3724.67	3722.61	3724.	3723.17	3725.40*	3723.02*	3724.95	3723.05

Notes:

TOC = top of casing

* = Oxygen-releasing compound sleeves/sc by the O-Sox sleeve.

Table 2
Brickland Refinery
Monitoring Well Groundwater Elevations (Feet, MSL)

Well ID	TOC	6/18/2003	12/16/2003	6/16/2004	12/16/2004	6/15/2005	12/14/2005	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

Notes:

TOC = top of casing

* = 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 sleeve.

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2012

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-3S	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	71/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
	6/23/2010	ND	ND	ND	ND
	12/7/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/14/2011	ND	ND	ND	ND
	6/19/2012	ND	ND	ND	ND
	12/11/2012	ND	ND	ND	ND
MW-3D	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND, ND	ND, ND	ND, ND	ND, ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
	6/23/2010	ND	ND	ND	ND
	12/7/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/14/2011	ND	ND	ND	ND
	6/19/2012	ND	ND	ND	ND
	12/11/2012	ND	ND	ND	ND
MW-4	6/28/2002	**100, 87**	ND, ND	ND, ND	ND, ND
	12/6/2002	–	–	–	–
	6/19/2003	–*	–*	–*	–*
	12/17/2003	–*	–*	–*	–*
	6/16/2004	**45**	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/14/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	–*	–*	–*	–*
	12/17/2007	–*	–*	–*	–*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	–*	–*	–*	–*
	12/10/2009	–*	–*	–*	–*
	6/22/2010	ND	ND	ND	ND
	6/28/2011	–*	–*	–*	–*
	12/15/2011	–*	–*	–*	–*
	6/20/2012	2.9	ND	ND	ND
	12/13/2012	ND	ND	ND	ND

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2012

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-5[a]	6/21/2010	**2200**	6.7	3	21
	6/30/2011	**870**	2.6J	ND	8.5J
	12/13/2011	**2000**	4.4	1.4	14 P
	7/20/2012	**400**	2.3J	1.4JP	26
	12/13/2012	**1100, 910**	ND, 2.7	ND, 0.96JP	18, 16
MW-6S[a]	6/19/2003	ND	ND	ND	8.7
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND, ND	ND, ND	ND, ND	ND, ND
	12/16/2004	ND, ND	ND, ND	ND, ND	ND, ND
	6/15/2005	0.8	ND	ND	0.86
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND, ND	ND, ND	ND, ND	ND, ND
	12/14/2006	**11**, 6.1	ND, ND	7.3, ND	1.6, ND
	6/14/2007	ND, ND	ND, ND	8.0 , 9.2	1.5, ND
	12/17/2007	ND, ND	ND, ND	2.2 , ND	ND, ND
	6/25/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	1.7, 1.8	ND, ND	4.6, 4.2	ND, ND
	12/11/2009	ND, ND	ND, ND	ND, ND	ND, ND
	6/24/2010	ND, ND	ND, ND	ND, ND	ND, ND
	6/29/2011	0.61J, ND	ND, ND	ND, ND	ND, ND
	12/16/2011	ND, ND	ND, ND	ND, ND	ND, ND
	6/21/2012	ND, ND	ND, ND	ND, ND	ND, ND
	12/12/2012	ND	ND	ND	1.4J
MW-6D	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/25/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/11/2009	ND	ND	ND	ND
	6/24/2010	ND	ND	ND	ND
	12/8/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/16/2011	ND	ND	ND	ND
	6/21/2012	ND	ND	ND	ND
	12/12/2012	ND	ND	ND	ND
MW-7	6/28/2002	ND	ND	ND	ND
	12/6/2002	--	--	--	--
	6/19/2003	--*	--*	--*	--*
	12/17/2003	--*	--*	--*	--*
	6/16/2004	ND	ND	ND	ND
	12/16/2004	--	--	--	--
	6/14/2006	ND	ND	ND	ND
	12/14/2006	--	--	--	--
	6/14/2007	ND	ND	ND	ND
	12/17/2007	--*	--*	--*	--*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	--*	--*	--*	--*
	12/10/2009	--*	--*	--*	--*
	6/22/2010	ND	ND	ND	ND
	6/28/2011	--*	--*	--*	--*
	12/15/2011	--*	--*	--*	--*
	6/20/2012	ND	ND	ND	ND
	12/12/2012	ND	ND	ND	0.82J
MW-8	6/22/2010	**6800**	27	23	32
	6/30/2011	**460**	ND	ND	ND
	12/14/2011	**9900**	7.7	15	12 P
	7/20/2012	**2700**	6.1J	7.2J	ND
	12/13/2012	**5500**	ND	ND	ND

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2012

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-9S	6/19/2003	ND, ND	ND, ND	ND, ND	ND, ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	0.60	ND	1.4
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/2/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
	6/23/2010	ND	ND	ND	ND
	12/8/2010	ND	ND	ND	ND
	6/29/2011	ND	ND	ND	ND
	12/15/2011	ND	ND	ND	ND
	6/21/2012	ND	ND	ND	ND
	12/12/2012	ND	ND	ND	ND
MW-10	6/24/2010	ND	ND	ND	3.9
	6/30/2011	ND	ND	ND	3.2
	12/14/2011	**30**	2.1	ND	50
	7/20/2012	**12**	1.3	0.39JP	19
	12/13/2012	**15**	.88J	ND	6.0P
MW-11	6/22/2010	ND	ND	ND	ND
	6/28/2011	4.7	ND	ND	ND
	12/15/2011	--	--	--	--
	6/19/2012	--	--	--	--
	12/12/2012	--	--	--	--
MW-14	6/28/2002	**11**	ND	ND	ND
	12/6/2002	--	--	--	--
	6/19/2003	--*	--*	--*	--*
	12/17/2003		--*	--*	--*
	6/16/2004	**230**	ND	ND	ND
	12/16/2004	--*	--*	--*	--*
	6/14/2006	ND	ND	ND	ND
	12/14/2006	--	--	--	--
	6/14/2007	--*	--*	--*	--*
	12/17/2007	--*	--*	--*	--*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	--*	--*	--*	--*
	12/10/2009	--*	--*	--*	--*
	6/22/2010	ND	ND	ND	ND
	6/28/2011	--*	--*	--*	--*
	12/15/2011	--*	--*	--*	--*
	6/20/2012	ND	ND	ND	ND
	12/13/2012	ND	ND	ND	ND
MW-15	6/28/2002	ND	ND	ND	ND
	12/6/2002	--	--	--	--
	6/19/2003	--*	--*	--*	--*
	12/17/2003	--*	--*	--*	--*
	6/16/2004	ND	ND	ND	ND
	12/16/2004	--	--	--	--
	6/14/2006	ND	ND	ND	ND
	12/14/2006	--	--	--	--
	6/14/2007	--*	--*	--*	--*
	12/17/2007	--*	--*	--*	--*
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	--*	--*	--*	--*
	12/10/2009	--*	--*	--*	--*
	6/23/2010	ND	ND	ND	ND
	6/28/2011	--*	--*	--*	--*
	12/15/2011	--*	--*	--*	--*
	6/21/2012	ND	ND	ND	ND
	12/12/2012	ND	ND	ND	ND

Table 3
Brickland Refinery
BTEX Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples
June 2002 through December 2012

Well	Date	Benzene	Toluene	Ethylbenzene	Xylenes
MW-17	6/22/2010	ND	ND	ND	ND
	6/28/2011	ND	ND	ND	ND
	12/15/2011	--	--	--	--
	6/19/2012	--	--	--	--
	12/12/2012	--	--	--	--
River Upstream	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
	6/23/2010	ND	ND	ND	ND
	12/7/2010	ND	ND	ND	ND
	6/30/2011	ND	ND	ND	ND
	12/13/2011	ND	ND	ND	ND
	6/19/2012	ND	ND	ND	ND
	12/11/2012	ND	ND	ND	ND
River Downstream	6/19/2003	ND	ND	ND	ND
	12/17/2003	ND	ND	ND	ND
	6/16/2004	ND	ND	ND	ND
	12/16/2004	ND	ND	ND	ND
	6/15/2005	ND	ND	ND	ND
	12/16/2005	ND	ND	ND	ND
	6/15/2006	ND	ND	ND	ND
	12/14/2006	ND	ND	ND	ND
	6/14/2007	ND	ND	ND	ND
	12/17/2007	ND	ND	ND	ND
	6/24/2008	ND	ND	ND	ND
	1/8/2009	ND	ND	ND	ND
	7/1/2009	ND	ND	ND	ND
	12/10/2009	ND	ND	ND	ND
	6/23/2010	ND	ND	ND	ND
	12/7/2009	ND	ND	ND	ND
	6/30/2011	ND	ND	ND	ND
	12/13/2011	ND	ND	ND	ND
	6/19/2012	ND	ND	ND	ND
	12/11/2012	ND	ND	ND	ND
NMWQCC Standard (µg/L)		**10**	**750**	**750**	**620**

Notes:

BOLD = Concentrations in bold type indicate levels exceed New Mexico Water Quality Control Commission (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

P = Dual Column results percent difference > 40%

µg/L = micrograms per liter

(a) = MW-5 and MW-6S and respective Duplicate samples are reported in the same cell and

-- = sample was not collected/analyzed for this constituent

--* = sample not collected/analyzed for this constituent in odd-numbered years

Table 4
Brickland Refinery
Total PAH Concentrations (µg/L) in Monitoring Wells and River Surface Water Samples

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
MW-1	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	--	ND	ND	ND	ND	--	--	--	--	--	--	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3D	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND,ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	--	ND, ND	ND	ND	ND	--	--	--	--	--	--	--	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	--	ND
MW-5	--	**107**	**117**	**191**	**139**	**117**	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.67	0.42	--
MW-6S	ND	ND	ND	ND	ND	ND	15, 10	ND	ND	ND	ND	22, **32**	ND	ND	ND,ND	ND	ND,ND	ND	ND,ND	ND,ND	ND, ND	ND, ND	ND	ND, ND	ND, ND
MW-6D	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-7	--	ND	ND	ND	ND	--	--	--	--	--	--	ND,ND	ND,ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	--	ND
MW-8	--	**250**	**93**	**366**	**236**	**180**	--	**140**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.21	ND	--
MW-9S	ND	ND	ND	ND	ND	ND	ND	ND	ND,ND	ND	ND,ND	ND	ND	ND	ND	ND,ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.13	1.66	--
MW-11	--	**29**	ND	**233**	**148**	ND	--	**140**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	0.06	--
MW-12	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--
MW-14	--	--	**570**	**40**	ND	ND	**12**	ND	--	--	--	ND	ND	ND,ND	ND	--	ND	--	ND	--	ND	ND	ND	--	ND
MW-15	--	--	**117**	**126**	**84**	ND	ND	ND	--	--	--	ND	ND	ND	ND	--	ND	--	ND	--	ND	ND	ND	--	ND
MW-16	--	--	--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-17	--	--	--	**58, 37**	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	1.03	--
River-Upstream	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
River-Downstream	--	--	--	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

June 2012 Data Detail							
Well	Acenaphthene	Acenaphthylene	Anthracene	Flourene	Naphthalene	Phenanthrene	Pyrene
MW-3S	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H
MW-3D	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H
MW-7	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H
MW-4	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H
MW-14	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H
MW-9S	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H	ND, H
MW-15	ND	ND	ND	ND	ND	ND	ND
MW-6D	ND	ND	ND	ND	ND	ND	ND
MW-6S	ND	ND	ND	ND	ND	ND	ND

Notes:

Total PAH Concentration is the sum of the Low-level PAHs listed in the data detail section
BOLD = Concentrations in bold type indicate levels exceed New Mexico Water Quality Control Commission (NMWQCC) standards for PAH concentrations (30 µg/L).
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
H = Analyzed outside of holding time
P&A = Well has been plugged and abandoned
-- = Not Sampled
µg/L = micrograms per liter
Duplicate result reported with MW-6S line, following the comma.

Table 5
Brickland Refinery
Lead Concentrations (mg/L)

Well	6/28/02	6/19/03	6/17/04	6/15/05	6/14/06	6/14/2007	6/25/2008	7/1/2009	6/21/2010	6/28/2011	6/19/2012
MW-3S	ND	ND	ND	ND	ND	ND	ND	<0.005	<0.002	<0.00500	<0.00070
MW-3D	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.004	<0.0250	<0.00070
MW-4	0.018	ND, ND	--	ND	ND	NS	ND	--*	<0.002	--*	<0.0014
MW-5	--	--*	--	--*	--	--*	--	--*	<0.004	0.00117J	--
MW-6S	ND	ND	ND, ND	ND	ND, ND	ND, ND	ND	<0.025	<0.002	<0.0250, 0.00274J	0.00152J, 0.00155J
MW-6D	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.004	<0.025	<0.0014
MW-7	0.022	ND	--	**0.190**	ND	--*	ND	--*	<0.002	--*	<0.0014
MW-8	--	--*	--	--*	--	--*	--	--*	<0.002	0.00841	--
MW-9S	ND	ND	ND	ND	ND	ND	ND	<0.01	<0.002	<0.00500	<0.0014
MW-10	--	--*	--	--*	--	--*	--	--*	<0.002	<0.00500	--
MW-11	--	--*	--	--*	--	--*	--	--*	<0.002	<0.01000	--
MW-14	0.015	ND	--	ND	ND	--*	ND	--*	<0.004	--*	<0.0014
MW-15	0.012	ND	--	ND	ND	--*	ND	--*	<0.002	--*	<0.0014
MW-17	--	--*	--	--*	--	--*	--	--*	<0.002	<0.00500	--
River Upstream	ND	ND	ND	ND	ND	0.0071	ND	<0.005	<0.0004	0.00214J	0.00674
River Downstream	ND	ND	ND	ND	ND	0.0057	ND	<0.005	<0.0004	0.00216J	0.00536

Notes:

BOLD = Concentrations in bold type indicate levels exceed New Mexico Water Quality Control Commission (NMWQC standards for lead (0.05 mg/L)

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.

mg/L = Milligrams per liter

ND = concentration was below laboratory detection limits.

-- = sample was not collected/analyzed for this constituent

--* = sample not collected/analyzed for this constituent in odd-numbered years

Duplicate result reported with MW-6S line, following the comma.

Table 6
Brickland Refinery
LNAPL Thickness Measurements (Feet)

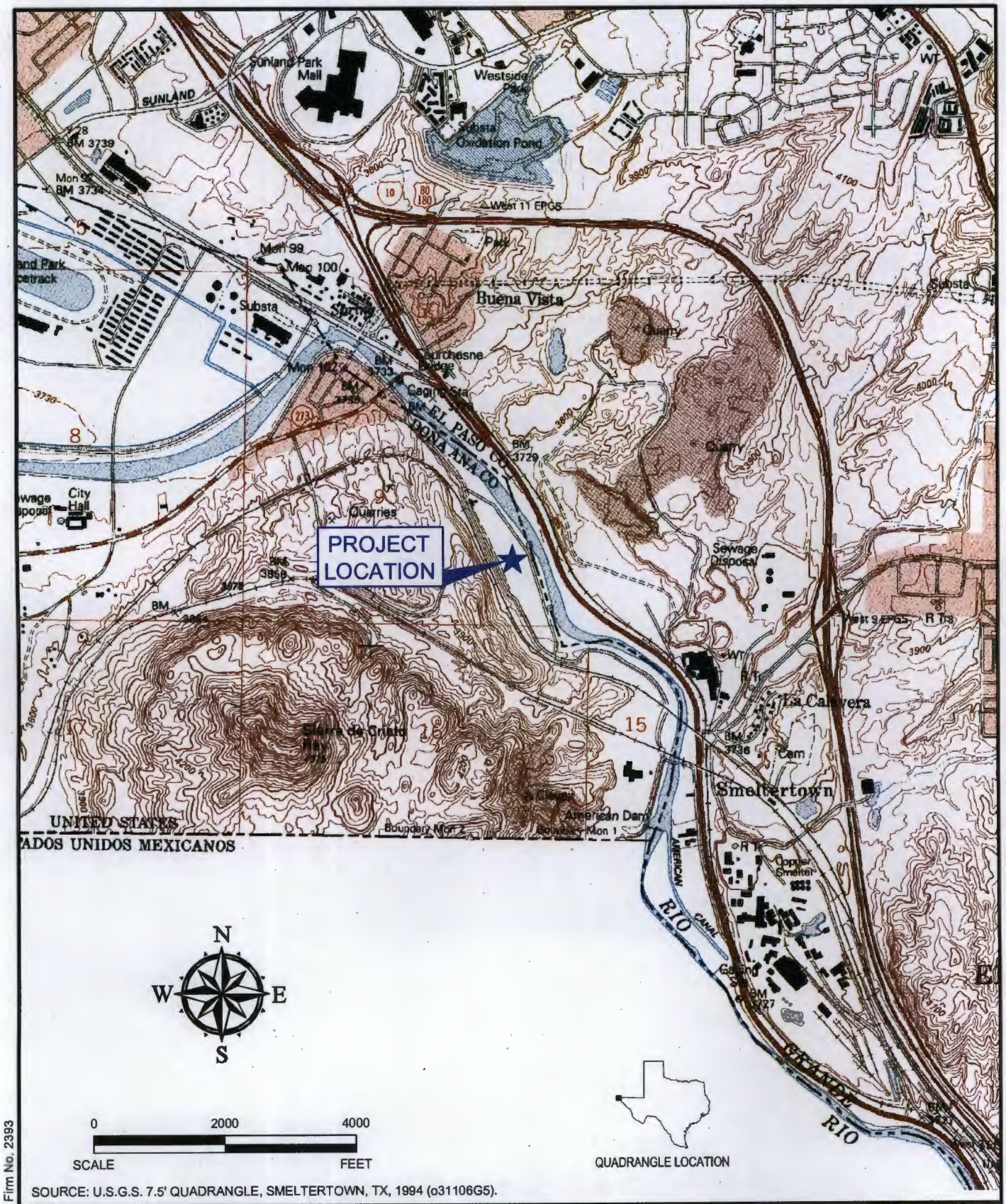
Well ID	Jun-03	Dec-03	Jun-04	Dec-04	Jun-05	Dec-05	Jun-06	Dec-06	Jun-07	Dec-07	Jun-08	Jan-09	Jul-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-11	Jun-12	Dec-12
MW-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MW-2	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A	P&A
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
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
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
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
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
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
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
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
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
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**
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
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
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
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
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
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
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
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
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**
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
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
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
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
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
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
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
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
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
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
WP-32	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Trace	Dry	Dry	NM	NM	NM	NM	NM	Dry	Dry	Dry	Dry
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**

Notes:

Tar = Thickness measurement not obtainable because of presence of thick tar-like substance in well point.
P&A = Well has been plugged and abandoned
Dry = Monitoring point was dry
NM = Monitoring point was not measured

Figures

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700



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

Environmental Resources Management

DESIGN: B. Stokes	DRAWN: EFC	CHKD.: B. Stokes
DATE: 2/10/2012	SCALE: AS SHOWN	REV.:
W.O. NO.: H:\DWG\B12\0137452_site.dwg, 2/10/2012 10:41:58 AM		

FIGURE 1
SITE LOCATION MAP
Brickland Refinery Site
Sunland Park, New Mexico

ERM

N

0 200 400
SCALE FEET

W. Paisano Dr. (Hwy 85)

Rio Grande River

ACCESS ROAD

FORMER BRICKLAND REFINERY SITE

Brickland Rd.

DOWNSTREAM

MW-09S

MW-06D
MW-06S

MW-15

WP-27S
WP-27D

WP-02

WP-01

WP-03

WP-32

WP-25

MW-16

MW-17

MW-10

WP-07

WP-31

MW-03D
MW-03S

WP-30

MW-07

MW-11

WP-33

WP-09

MW-14

MW-08

MW-04

WP-14

MW-01

UPSTREAM

MW-05

MW-12

LEGEND

WP-16 • WELL POINT

MW-02 ◈ MONITORING WELL

■ APPROXIMATE RIVER SAMPLING LOCATION

⊏=⊐ CULVERT

—×—×— FENCE

NOTE: ONLY ACTIVELY MEASURED WELLS SHOWN, PLUGGED AND ABANDONED EXCLUDED.

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

ERM-Southwest, Inc. TX PE Firm No. 2393

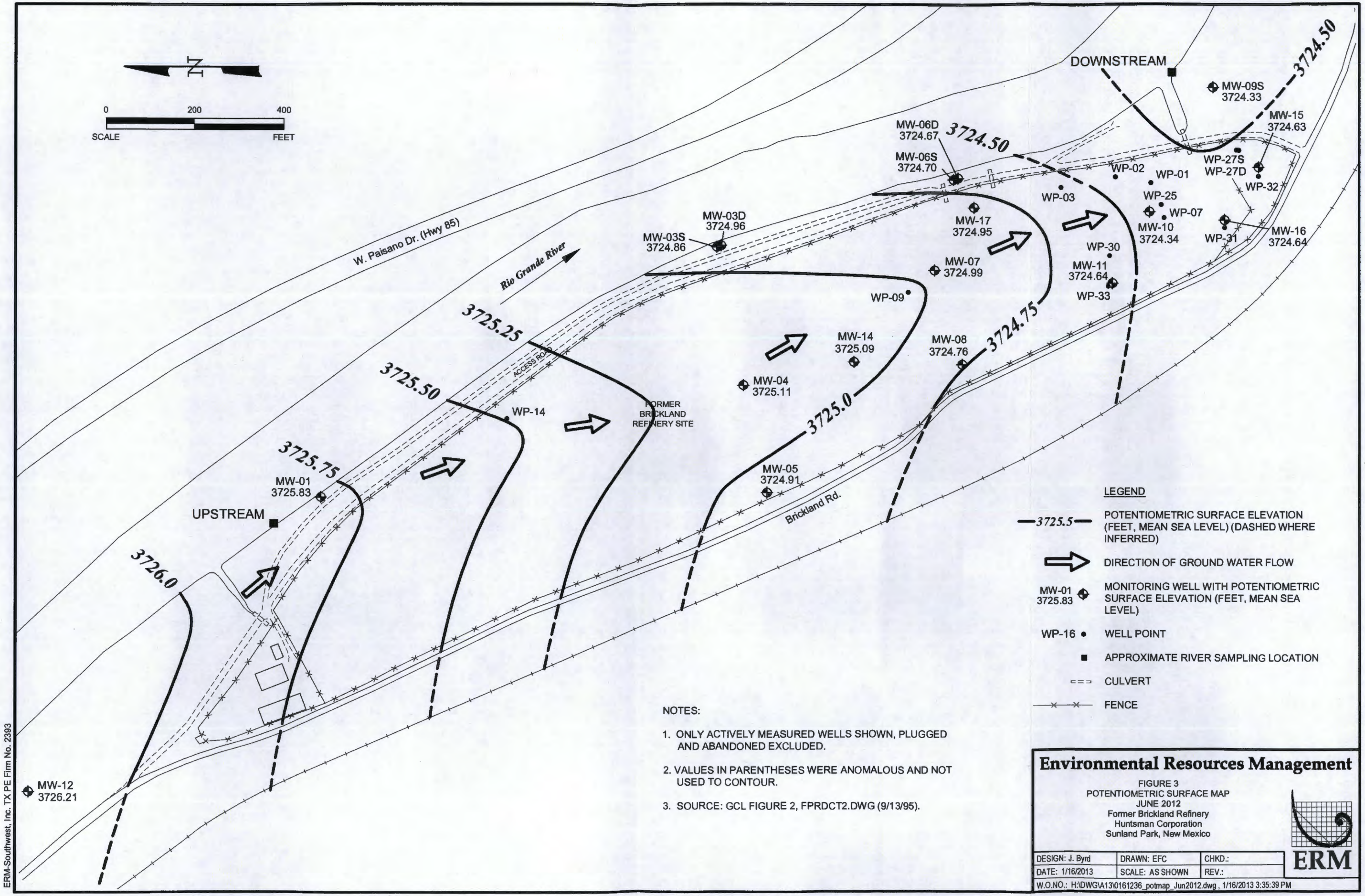
Environmental Resources Management

FIGURE 2
SITE LAYOUT
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

DESIGN: J. Byrd	DRAWN: EFC	CHKD.:
DATE: 3/6/2012	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\C12\0137452b2.dwg, 3/6/2012 1:42:42 PM

ERM



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).

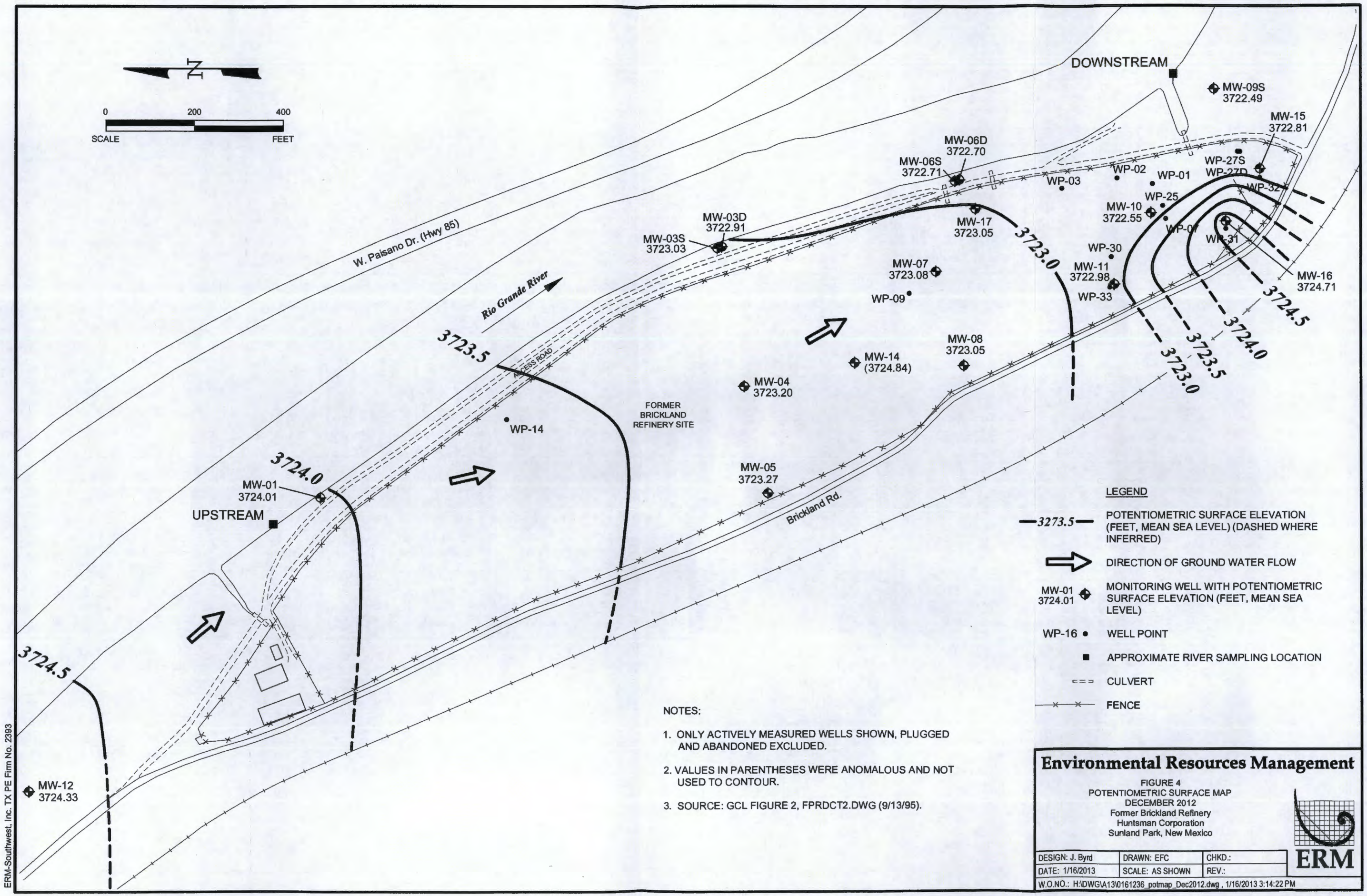
Environmental Resources Management

FIGURE 3
POTENTIOMETRIC SURFACE MAP
JUNE 2012
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

DESIGN: J. Byrd	DRAWN: EFC	CHKD.:
DATE: 1/16/2013	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\A13\0161236_potmap_Jun2012.dwg , 1/16/2013 3:35:39 PM

ERM



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).

Environmental Resources Management

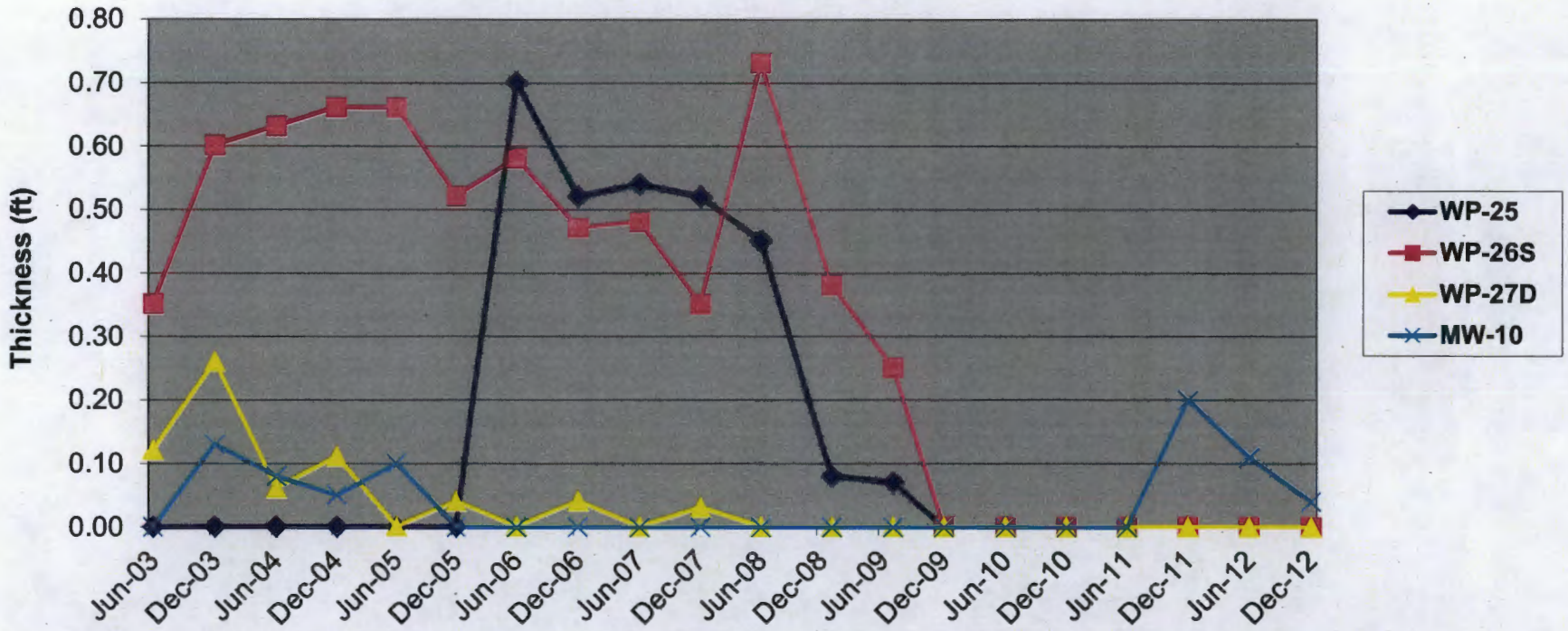
FIGURE 4
POTENTIOMETRIC SURFACE MAP
DECEMBER 2012
Former Brickland Refinery
Huntsman Corporation
Sunland Park, New Mexico

DESIGN: J. Byrd	DRAWN: EFC	CHKD.:
DATE: 1/16/2013	SCALE: AS SHOWN	REV.:

W.O.NO.: H:\DWG\A13\0161236_potmap_Dec2012.dwg , 1/16/2013 3:14:22 PM

ERM

Figure 5 - LNAPL Thickness



Field Data

Appendix A

March 2013
Huntsman
Project No. 0161236

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

DATE	6/19/12
SHEET	1 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-BRICKLAND SITE	0137452

FIELD ACTIVITY SUBJECT:
Semi-annual gauging & sampling event

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0600 Arrived from office: Randy and Vlad
- Reviewed and signed site HASP, Level II HASP, THAs and daily safety briefing
- Load up truck-depart for Airgas

0745 Arrived Airgas, pick-up N_2 bottles for lo flow sample
0845 Arrived on site - Huntsman - called PM - onsite
0910 Open all wells and check with PID and record
1115 Gauge sample wells, then MW's, then WP's
1305 Finished gauging MW's - break for lunch
1410 Back on site - set-up for GW sampling, gauge WP's
1520 Set out FB-1 at MW-35
1525 Set up at MW-35 and begin purging well
1540 Unable to gauge WP's (well points) QED pump not working
1615 Sample time MW-35; all MW's, river samples
3x40ml VOAs HCl BTEX, ice samples collected and
1x500ml poly HNO_3 Pb, ice placed in cooler on ice
2x1L amber glass AA's, ice
1620 Set-up and sample MW-30
1655 Sample time river-upstream

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
None	None
WEATHER CONDITIONS:	**IMPORTANT TELEPHONE CALLS:**
Clear skies, sunny, hot 80-105°F, dry, windy West 5-20 mph	Hourly calls/text to PM Jennifer Warfield and/or Natalie Pickett while on site per TRA protocol

PERSONNEL ON SITE:
From: Randolph Ortlund; Vlad Labenski

SIGNATURE
Randolph Ortlund

DATE	6/19/12
SHEET	2 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN - BRICKLAND SITE	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GAUGING AND SAMPLING EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:
1705 SAMPLE TIME EB-1 (DISTILLED WATER) RIVER SAMPLER FOR ALL EB (EQUIPMENT BLANKS) AND FB (FIELD BLANKS) 3x40 ml VOAs HCl BTEX, ICE
1715 SAMPLE TIME RIVER-DOWNSTREAM
1720 SAMPLE TIME MW-30
1735 FB-1 PICKED UP AND SEALED
1740 CLEAN UP AND DEPART
1830 DEPART SITE: COMPOUND AND MAIN GATE LOCKED ORDER NEW OWIP (OIL/WATER INTERFACE PROBE SAMPLES IN COOLER ON ICE

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
See P. 1	
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE
Randolph Patterson

DATE	6/20/12
SHEET	1 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME: HUNTSMAN-BRICKLAND SITE

PROJECT NUMBER: 0137452

FIELD ACTIVITY SUBJECT: SEMI-ANNUAL GAUGE AND SAMPLING EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0600 ARRIVED FROM OFFICE
BORROWED OWIP FROM BEN — LOAD UP TRUCK
0630 DEPART FOR HUNTSMAN; PICK-UP VLAD AND ICE
0730 ARRIVED ON SITE - HUNTSMAN - CALL AM JENNIFER
REVIEWED AND SIGNED AGAIN SAFETY BRIEFING/FORM
0750 ARRIVED MW-7 SET-UP FOR PURGE AND SAMPLE
CHECK EQUIPMENT CALIBRATION:
HORIBA U-52 W/FLOW THRU CELL
PH-7 STD READS 7.11 OK
PH-4 STD READS 4.07 OK
PH-10 STD READS 10.04 OK
CONDUCTIVITY STD 1.413 mS/cm READS 1.380 OK
TURBIDITY METER: LAMOTTE 2020E
0 NTU STD READS 0.12 OK (NO 10 NTU STD)
0845 SET OUT FB-2 AT MW-7
0850 PURGE AND SAMPLE MW-7
GAUGE WLS
0930 SAMPLE TIME MW-7
1000 SET-UP PURGE AND SAMPLE MW-4
1100 SAMPLE TIME MW-4

VISITORS ON SITE:

NONE

CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:

NONE

WEATHER CONDITIONS:

CLEAR, SUNNY, HOT 80-105°F
DRY, WINDY WEST 5-20 MPH

IMPORTANT TELEPHONE CALLS:

HOURLY CALLS TO PM JENNIFER WARFIELD AND/OR NATALIE PICKETT WHILE ON SITE
TRA PROTOCOL

PERSONNEL ON SITE:

ERM: RANDOLPH ORTLUND; VLAD LABENSKI

SIGNATURE

Randolph Ortlund

DATE	6/20/12
SHEET	2 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-BRICKLAND SITE	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GAUGING AND SAMPLING EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1115 SAMPLE TIME EB-2 WATER LEVEL PROBE
1130 BREAK FOR LUNCH BUY ICE
1245 BACK ON SITE; SET UP MW-14 PROBE AND SAMPLE
1400 SAMPLE TIME MW-14
1415 GO TO STORE PICK-UP MORE ICE, ILLIAS (VERY HOT)
1455 ARRIVE MW-95 SET UP PROBE AND SAMPLE
1540 SAMPLE TIME MW-95
1615 FB-2 PICKED UP AND SEALED
1630 DEPART SITE, CLEANED UP, COMPOUND AND MAIN GATE LOCKED
1700 ARRIVED ERM OFFICE
UNLOAD SAMPLE COOLERS - ROCK WITH ICE

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
See P. 1	
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE: Randolph Outland

DATE	6/21/12
SHEET	1 of 3

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-BRICKLAND SITE	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GAUGING AND SAMPLING EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0600 ARRIVED FROM OFFICE - REVIEWED AND SIGNED DAILY SAFETY BRIEFING LOAD W TRUCK

0620 DEPART FOR HUNTSMAN - BUY ICE

0700 ARRIVED HUNTSMAN - SET UP AT MW-15

0730 FB-3 SET OUT AT MW-15 PURGE AND SAMPLE

0735 CALIBRATE SAMPLING EQUIPMENT:
- STD 0.00 NTU READ 0.00 NTU OK
- STD PH-7 READ 6.75 OK
- STD PH-4 READ 3.72 OK
- STD PH-10 READ 9.92 OK
- STD 1.413 MS/cm READS 1.36 OK

0840 SAMPLE TIME MW-15

0850 SET UP AT MW-6A PURGE AND SAMPLE
0-SOX REMOVED FROM MW-5 AND MW-8 AND PLACED IN DRUM CONTAINING SPENT 0-SOXS NOT REPLACED AT THIS TIME

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
NONE	BAIL DOWN MW-10 CK RECHARGE SAMPLE NAPL AND DISSOLVED PHASE
WEATHER CONDITIONS: CLEAR, SUNNY, HOT 80-105°F DRY, WINDY WEST 5-15 MPH	IMPORTANT TELEPHONE CALLS: HOURLY CALLS TEXT TO PM JENNIFER WARFIELD AND/OR NATALIE PICKETT WHILE ON SITE PER TRA PROTOCOL

PERSONNEL ON SITE:
EEM - RANDOLPH ORTLUND; VLAD LARENSKI

SIGNATURE
Randolph Ortlund

DATE	6/21/12
SHEET	2 of 3

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-PARKLAND SITE	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GAUGING AND SAMPLING EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1015 SAMPLE TIME MW-6D
1035 SET-UP MW-6S PURGE AND SAMPLE
1100 MW-10 BAILED DRY ~30 MIN RECHARGE
NO NEW NAPL DETECTED
1120 SAMPLE TIME MW-6S, MW-6S MS,
MW-6S MSD, DUP-1
1235 FINISHED GW SAMPLING CLEAN UP SITE
1240 BROOK FOR LUNCH
1330 BACK ON SITE
1335 FB-3 PICKED UP AND SEALED
1400 SAMPLE TIME: MW-10 NAPL; MW-10 DISSOLVED PHASE
1415 DEPART SITE: COMPOUND AND MAIN GATE LOCKED
- PURGE WATER IN NEW DRUM, PREVIOUS PW DRUM FULL
- PPE IN HEAVY DUTY TRASH BAG IN COMPOUND
- BAILED WATER/NAPL IN 3×5 GALLON BUCKETS-SEALED
WILL TRANSFER TO DRUM WHEN BACK ON SITE
FOR DISPOSAL IN COMPOUND

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
SEE P. 1	
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE
Randolph Ortland

DATE	6/2/12
SHEET	3 of 3

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-BRICKLAND SITE	0137452

FIELD ACTIVITY SUBJECT:
SEMI-ANNUAL GAUGING AND SAMPLING EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

- REPLACE O-SOX IN MW-5 AND MW-8 NEXT SITE VISIT
- LOCK DAMAGED ON MW-8 (REPLACED WITH ERM LOCK)
- NEED ADDITIONAL LOCKS KEYED ALIKE
- TOOK PICTURES OF CUT BARBED WIRE AT MAIN ENTRANCE GATE

1435 ARRIVED ERM OFFICE

- PACK UP AND SHIP RENTAL EQUIPMENT
- PACK UP AND SHIP SAMPLE COOLERS
- UNLOAD TRUCK

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
See P.1	
WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:

PERSONNEL ON SITE:

SIGNATURE: Randolph Outland

Daily Safety Meeting

ERM

Date	Meeting Facilitator	Project Name	Project Number
6/19/12	RANDOLPH ORTLUND	HUNTSMAN	0137452

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

SIT/F - INCLEN, SOFT GROUND, SLOPES, BURROWS, GRAVEL, PPE
DRIVING - OBEY LAWS, CLEAN WINDOWS, MIRRORS, BACK IN BIG PICTURE, SEAT BELTS
NAPL LIQUID - SPILL KIT, PPE, UPLAND, NITRILE GLOVES
VOCs - UPLAND, PID
LIFTING - PROPER TECHNIQUE, POSITION, HELP, LIGHT LOADS
PINCH POINTS - LEATHER GLOVES, POSITION

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

O-SOX - NITRILE GLOVES, UPLAND, PPE
ANIMALS - STRAY DOGS, AVOIDANCE, SAFE DISTANCE
INSECTS - BLOCK WINDOWS, MOSQUITOES, BEES, FIRST AID
HEAT/UV - UMBRELLA, LIQUIDS, PPE, SUNSCREEN, A/C

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

GAUGE AND SAMPLE GW MONITOR WELLS

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

ATTENDEES (Print name and initial)

VLAD LABENSKI	VL
RANDOLPH ORTLUND	RO

Daily Safety Meeting

ERM

Date	Meeting Facilitator	Project Name	Project Number
6/20/12	RANDOLPH ORTLUND	HUNTSMAN	0137452

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

S/T/F - PPE, UNEVEN GROUND, SLOPES, CONCRETE EDGES, SAND ON PAD, GROUND DEBRIS, EYES ON PATH, STICK-UPS, GRAVEL
DRIVING - BIG PICTURE, DEFENSIVE, LAWS, SPEED LIMIT, 2 SECONDS AHEAD, EMERGENCY BRAKE, SEAT BELTS, CLEAN WINDOW, MIRRORS, 360 CK BACK-IN, EYE CONTACT OTHER DRIVERS, WORKERS, PEDS
VOCs - UPWIND, MONITOR, PERMITS, H2S MONITOR
HEAT/UV - SUNSCREEN, SHADE, FLUIDS, REST, A/C, APE
PINCH POINTS/LIFTING - POSITIONING PROCEDURE, POSTURE/TECHNIQUE ~~WORK GLOVES, PITS TOOLBOX TALK~~

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

~~EMERGENCY/EVACUATION - MONITOR REFINERY RADIO, WIND DIRECTION, EVACUATION LOCATIONS: MARCUS GATE, SOUTH MAIN ENTRANCE GATE, EMER CHANNEL 1, 911~~
LIQUIDS/NAPL - PPE, SPILL KIT, NITRILE GLOVES, BUCKETS W/LIDS.
INSECTS/ANIMALS - FIRST AID KIT, PPE, SAFE DISTANCE
HASP/JHA/THA BLACK WIDOWS, ANTS, SNAKES, MOSQUITOES

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

CONTINUE GW SAMPLING AND GAUGING

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

HOUSEKEEPING
BORDER PATROL AREA - ILLEGAL IMMIGRANTS
JRA PROTOCOL

ATTENDEES (Print name and initial)

RANDOLPH ORTLUND, RO	
VLAD LABENSKI	6/20/12

Daily Safety Meeting

ERM

Date	Meeting Facilitator	Project Name	Project Number
6/21/12	RANDOLPH GROUND	DYNAMAN	0137452

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

S/T/F - PPE, UNEVEN GROUND, SLOPES, CONCRETE EDGES, SAND ON ASP, GROUND DEBRIS, EYES ON PATH, STICK-UPS, GRAVEL
DRIVING - BIG PICTURE, DEFENSIVE, LAWS, SPEED LIMIT, 2 SECONDS AHEAD, EMERGENCY BRAKE, SEAT BELTS, CLEAN WINDOW, MIRRORS, 360 CK, BACK-IN, EYE CONTACT OTHER DRIVERS, WORKERS, PEDS
VOCs - UPWIND, MONITOR, PERMIT, H2S MONITOR
HEAT/UV - SUNSCREEN, SHADE, FLUIDS, REST, H/C, PPE
PINCH POINTS/LIFTING - POSITIONING, PROCEDURE, POSTURE/TECHNIQUE, ~~LIFT EQUIPMENT~~, ~~GLOVES~~

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

EMERGENCY/EVACUATION - MONITOR REFINERY RADIO, WIND DIRECTION, EVACUATION LOCATIONS: MARLIN GATE, SOUTH MAIN ENTRANCE GATE, EMER CHANNEL 1, 3911
LIQUIDS/NAPL - PPE, SPILL KIT, NITRILE GLOVES, BUCKETS W/LIDS.
INSECTS/ANIMALS - FIRST AID KIT, PPE, SAFE DISTANCE, DRINK
~~HASP~~ ~~JHA~~ ~~TBA~~ BLACK WIDOWS, DOGS, SNAKES, MOSQUITOES

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

CONTINUE FW SAMPLING AND NAPL RECOVERY

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

HOUSEKEEPING
BORDER PATROL AREA - ILLEGAL IMMIGRANTS, DRUG ACTIVITY

ATTENDEES (Print name and initial)

RANDOLPH GROUND	
MAR LABOUSKI	

(109) 2437

0137452 HUNTSMAN WASTE SAMPLE 2/13/2012

1230 PATTI GIBSON ON SITE - FERN OFFICE

1300 REVIEW HASP, JHA'S, MSDS FOR O-SOX SAMPLING, DAILY BRIEFING AND ASSIGNED TASKS

OBJECT: SAMPLE O-SOX WASTE
FENCE LINE PICTURES

PERSONNEL: FERN - RANDY ORTLUND
PATTI GIBSON

EQUIP: T-84, CELL, TOOL KIT, CAMERA
SAMPLING KIT

WEATHER: CLR, SUNNY, MILD, DRY
WIND SW 10-30 MPH, 55-65°F

HHS: REVIEW HASP, JHA'S, MSDS
REVIEW AND SIGN DAILY FORMS

1310 LOAD UP TRUCK - DEPART FOR SITE

1350 ARRIVE ON SITE - HUNTSMAN
- SAMPLE O-SOX USED
- LABEL DRUMS
- PHOTOS FENCE LINE REPAIRS

1520 TASKS COMPLETED:
- COMPOUND LOCKED, MAIN GATE LOCKED
- DRUMS SEALED / LABELED
- PATTI AND ME OFF SITE
- BACK TO OFFICE
- PACK AND SIGN SAMPLES

Randolph Ortlund 2/13/12

(105) 2437

0137452 HUNTSMAN GW GAUGE / SAMPLE 6/19/2012

0600 ARRIVE ON SITE - FERN OFFICE
- LOAD UP TRUCK
- REVIEW AND SIGN HHS DOCUMENTS

OBJECT: PERFORM SEMI-ANNUAL GAUGING
SAMPLING EVENT AT HUNTSMAN

PERSONNEL: FERN - RANDY ORTLUND
- VLAD LABENSKI

EQUIP: T-84, CELL, TOOL KIT, GW SAMPLE
AND GAUGE EQUIP, PID

WEATHER: CLR, SUNNY, HOT, DRY, WINDY
80-105°F W 5-20 mph

HHS REVIEWED AND SIGNED:
- HASP LEVEL II AND III
- TBT'S
- DAILY BRIEFING
- TRA

0630 LOAD UP TRUCK - DEPART FOR SITE

0730 GO TO AIRGAS FOR N2 BOTTLES
DIA NOT DELIVER AS ORDERED YESTERDAY.

0815 ARRIVED ON SITE - HUNTSMAN
CALL JENNIFER WARFIELD - CK IN
- UNLOAD TRUCK SET UP FOR WELL GAUGING

0910 OPEN WELLS OK W/ PID

Randolph Ortlund 6/19/12

(106) 2437

0137452 HUMOSMAN GW SAMPLING 6/19/12 TUE

WELL GAUGING PROTOCOL:

1) OPEN ALL WELLS AND CHECK W/ PID (MW's, WP's)
2) GAUGE CLEAN MW's (WL) CLEAN TO DIRTY SAMPLE WELLS
3) GAUGE CLEAN MW's (WL) NOT SAMPLED WELLS
4) GAUGE WP's (OWIP)

- CLEAN WATER LEVEL WITH ALCONOX AND DIST WATER AFTER GAUGING WELL;
- USING LEATHER GLOVES TO OPEN WELLS AND NITRILE GLOVES TO GAUGE WELLS

5) REPLACE WELL SEALS ALL WELLS AFTER GAUGING

0945 CALL-IN CK JW (HOURLY-TRA)

1115 GAUGE SAMPLE WELLS MW's: FROM TOC OF WELL CASING PVC

- FINISHED OPENING ALL MW's AND WP's AND CKING W/ PID

1155 CALLED JW CK-IN PER TRA OK

1205 FINISHED GAUGING SAMPLE MW's GAUGE CLEAN MW's NOT SAMPLED

1300 FINISHED GAUGING MW's

Randolph Ortland 6/19/12

(107) 2437

013745 HUMOSMAN GW SAMPLING 6/19/12 TUE

1305 BREAK FOR LUNCH LOCKED GATE

1356 CALLED JW CK-IN HOURLY-TRA

1410 BACK ON SITE - HUMOSMAN
- SET-UP FOR GW SAMPLING

1500 TESTED NADOLIE PACKET - OK

1520 SET OUT PB-1 AT MW-3S

1535 SET UP AT MW-3S AND BEGIN PURGE

1544 FINISH GAUGING WP's - VLAD
RANDY SAMPLING MW-3S

1615 SAMPLE TIME MW-3S:
- 3x40ml VOAS BTEX HCl ICE
- 1x500ml POLY Pb HNO3 ICE
- 2x1L AMBER GLASS PAHs ICE

1620 SET UP AND SAMPLE MW-3D

1720 SAMPLE TIME MW-3D
- 3x40ml VOAs BTEX HCl ICE
- 1x500ml POLY Pb HNO3 ICE
- 2x1L AMBER GLASS PAHs ICE

1655 SAMPLE TIME RIVER-UPSTREAM
- 3x40ml VOAS BTEX HCl ICE
- 1x500ml POLY Pb HNO3 ICE
- 2x1L AMBER GLASS PAHs ICE

1715 SAMPLE TIME RIVER - DOWNSTREAM
- 3x40ml VOAS BTEX HCl ICE
- 1x500ml POLY Pb HNO3 ICE
- 2x1L AMBER GLASS PAHs ICE

Randolph Ortland 6/19/12

013745.2 HUNTSMAN GW SAMPLING 6/19/12 TUE

1705 FB-1 DISTILLED WATER
RIVER SAMPLER
3x40 ml VOAs BTEX HCl ICE

1735 FB-1 DISTILLED WATER
AT MW-3A
3x40ml VOAs BTEX HCl ICE

1803 TESTED NEEDLE OK
CLEAN UP SITE - DEPART

1820 DEPART SITE - BACK TO OFFICE
NOTIFIED ATTESTED NEEDLE
DROP OFF VLAD
- SAMPLES ON ICE
* PROBLEMS WITH OLD IP
COULD NOT GAUGE WLs
GET REPLACEMENT AND
GAUGE TOMORROW
- ALL MW's EXCEPT MW-40
GAUGED TODAY
- COMPOUND GATE AND
MAN GATE LOCKED

Randolph Oetlund 6/20/12

013745.2 HUNTSMAN GW SAMPLING 6/20/12 WED

0600 ARRIVE EEM OFFICE
GET OWIP FROM BEN W/SOIC

OBJECT: CONTINUE GW SAMPLING
EVENT AT HUNTSMAN

PERSONNEL: EEM - RANDY OETLUND
VLAD LABENSKI

EQUIPMENT: T-84, CELL, TOOLKIT, OWIP
GW SAMPLING EQUIP, PID

WEATHER: CLR, SUNNY, HOT, DRY, WINDY
80-105°F, W 5-20 mph

H&S: REVIEW AND DAILY FORM

0630 PICK-UP VLAD AT MOTEL
I GOT OWIP FROM BEN W/SOIC

0640 BACK AT EEM OFFICE
DROP OFF SOME UNNEEDED EQUIP
PICK UP SAMPLE COOLERS

0650 DEPART FOR HUNTSMAN
PICK-UP ICE AND FLUIDS

0730 ARRIVE ON SITE - HUNTSMAN
- CALLED IN TO JENNIFER WARFIELD
PER H&S PROTOCOL
- REVIEWED AND SIGNED DAILY
SAFETY BRIEFING FORM
- SET UP FOR GW SAMPLING

0750 ARRIVE MW-7 SET UP FOR SAMPLING

Randolph Oetlund 6/20/12

013745 2 Huntsman FW Sampling 6/20/12 Wed

0815 CAL CK Horiba U-52 Flow Thru Cell (YSI Equivalent)

STD PH-7 Reads 7.11 OK

STD PH-4 Reads 4.07 OK

STD PH-10 Reads 10.09 OK

Conductivity

STD 1.413 mS/cm Reads 1.38 OK

Turbidity

STD 0.00 NTU Reads 0.12 OK

No 10.00 STD w/ meter

0835 Notified Needle Pickett on site and OK

0845 FB-2 (Distilled water) set out at MW-7

0850 Purge and sample MW-7

0900 OWIP working OK now New Batteries

Vlad Gauging WL's and MW-10

0930 Sample time MW-7:

- 3x40ml VOAs BTEX HCl Ice
- 1x500 ml Poly HNO3 Pb Ice
- 2x1L Amber Glass PAHs Ice

1000 Set up Purge Sample MW-4

1100 Sample Time MW-4

3x40ml VOAs BTEX HCl Ice

Randolph Ottland

013745 2 Huntsman FW Sampling 6/20/12 Wed

1x500ml Poly Pb HNO3 Ice

2x1L Amber Glass PAHs Ice

1115 Sample time FB-2 (Distilled water) water level probe

3x40ml VOAs BTEX HCl Ice

1130 Break for lunch - Finished WL's

1245 Back on site

- Bought Ice
- CK-in w/ NP per JRO
- Set up and sample MW-14

1400 Sample time MW-14

3x40ml VOAs BTEX HCl Ice

1x500ml Poly Pb HNO3 Ice

2x1L Amber Glass PAHs Ice

1415 Go to store pick up water, Ice

1455 Arrive MW-9S:

- Set up to purge & sample MW-9S

1540 Sample time MW-9S:

3x40ml VOAs BTEX HCl Ice

1x500ml Poly Pb HNO3 Ice

2x1L Amber Glass PAHs Ice

1545 Clean up site - pick up FB-2

1550 Called Jennifer to discuss NAPL Recovery - use P-pump and Stabilizer - discuss tomorrow

Randolph Ottland 6/20/12

(112) 2437

013745.2 Huntsman GW Sampling 6/20/12 1605

1615 FB-2 capped
3x40ml VOAs BTEX the ice

1630 Depart site: Back to office
- Compound gate locked
- Main gate locked
- Notified Natalie Pickett that we are off-site and good

1700 Arrive ERM office
Unload sample coolers
Place on ice - samples

Randolph Ortland 6/20/12

(113) 2437

013745.2 Huntsman GW Sampling 6/21/12 THUR

0600 Arrive ERM office
Load w/truck - depart for site

Object: Finish GW sampling
- Remove O-Sox MW-5, 8
- Bail MW-10 NAPL

Personnel: ERM - Randy Ortland
~~VAT~~ Vlad Labenski

Equip: T-84, cell, tool kit, ow/ip
GW sampling equip, P-pump

Weather: Clr, sunny, hot, slt humid
windy, 80-105°F, W 5-15 mph

H&S: Reviewed and signed daily
briefing form

0620 Depart for site - Huntsman
Pick up ice

0700 Arrived on site - Huntsman
Notified Natalie Pickett and Petra
Load w/truck for GW sampling
and set up at MW-15

0730 FB-3 set out at MW-15

0735 Calibrate GW equip:
- 2020e LaMotte turbidity meter
- STD 0.00 Read 0.00 NTU
- Horiba-U52 flow cell
- STD pH-7 Read 6.75 ok

Randolph Ortland 6/21/12

(114) 2437

0137452 HUNTSMAN GW SAMPLING 6/21/12 TEXAS

- STD PH-4 READ 3.72 OK
- STD PH-10 READ 9.92 OK
- CONDUCTIVITY
  STD 1,413 MS/cm
  READS 1.36 OK

0840 SAMPLE TIME MW-15
  3x40ml VOAS BTEX HCL ICE
  1x500 POLY Pb HNO_3 ICE
  2x1L AMBER BOTTLE PAHS ICE

0850 SET UP AT MW-6D
  PURGE AND SAMPLE

- CONTACTED NATALIE PICKETT
  TCEQ ...
- CALLED JW ABOUT LOCKS
  NEED TO REPLACE SAME
  ALL KEYED ALIKE
  1 BROKEN LOCK AT MW-8
- O-SOX'S REMOVED FROM
  MW-5 AND MW-8 AND
  PLACED IN 55 DRUM
  W/OTHER SPENT O-SOX.

1000 JENNIFER CALLED:
  NAPL RECOVERY MW-10
  BAIL DRY IF POSSIBLE
  SAMPLE FOR WASTE DISPOSAL

Randolph Ortland 6/21/12

(115) 2437

0137452 HUNTSMAN GW SAMPLING 6/21/12 TEXAS

CK RECHARGE

1015 SAMPLE TIME MW-6D:
  3x40ml VOAS BTEX HCL ICE
  1x500ml POLY Pb HNO_3 ICE
  2x1L AMBER GLASS PAHS ICE

1035 SET UP AND PURGE AND SAMPLE MW-6S

1100 MW-10 BAILED DRY
  30 MIN RECHARGE
  NO NEW NAPL YET

1120 SAMPLE TIME:
MW-6S
MW-6S MS
MW-6S MSD
DUP-1 (COC TIME 0800) AT MW-6S
  3x40mL VOAS BTEX HCL ICE
  1x500ml POLY Pb HNO_3 ICE
  2x1L AMBER GLASS PAHS ICE

1235 FINISHED GW SAMPLING
  CLEAN UP SITE
  INSPECTED NP - OK

1240 BREAK FOR LUNCH

1330 BACK ON SITE:
- NO O-SOX ON SITE TO PLACE
  IN MW-5, 8 (BACK AT WAREHOUSE)
  ORIGINALLY, WE WERE NOT ...

Randolph Ortland 6/21/12

(116) 2437

0137452 Huntsman GW Sampling 6/21/12

INSTALL - INSTALL WHEN
I RETURN TO HANDLE WASTE
DISPOSAL.

1335 FB-3 PICKED UP SEALED:
- DUMP PURGE WATER FROM
5 GAL BUCKETS INTO DRUM
- SAMPLE PURGE WATER / NAPL
FROM MW-10

1400 SAMPLE TIME:
MW-10 NAPL 3 VOAS
MW-10 DISSOLVED PHASE 3 VOAS

1415 DEPART SITE:
- PURGE WATER IN DRUM
- PPE IN COMPOUND
- CALLED JW NO ANSWER
- TEXTED NP
- COMPOUND GATE LOCKED
- MAIN GATE LOCKED
- BACK TO OFFICE
PACK UP EQUIP AND
SAMPLES

1435 BACK TO ERM OFFICE
- UNLOAD TRUCK
- ICE DOWN SAMPLES
- PACK-UP EQUIP

1530 DROP OFF ~~HERE~~ TO FEDEX

Randolph Outlaw 6/21/12

(117) 2437

0137452 Huntsman GW Sampling 6/21/12

1550 DROP OFF VLAD GIRARD
1615 BACK TO OFFICE:
- COC FILLED OUT
- LONESTAR PICKUP GW SAMPLE
- EQUIP - BACK TO ERM HOUSTON
W/ TURBIDITY METER, CONTROLLER
- SHIP SAMPLE COOLERS
TOMORROW

Randolph Outlaw 6/21/12

Huntsman Wells Gauging Information (Monitor Wells)

Well ID	Date	Gauge Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-1	6/19/12	1210	1.7	–	4.74		WELLS GAUGED FROM TOC TOP OF PVC WELL CASING
MW-2	—	–	–	–	–	–	P&A 6/99
MW-3S	6/19/12	1148	1.7	–	5.14		
MW-3D	6/19/12	1150	1.7	–	5.04		
MW-4	6/19/12	1136	3.7	–	3.75		
MW-5	6/19/12	1250	26	–	4.79		
MW-6S	6/19/12	1204	1.6	–	5.95		
MW-6D	6/19/12	1200	1.6	–	5.95		
MW-7	6/19/12	1130	2.4	–	3.97		
MW-8	6/19/12	1242	24	–	4.46		REPLACE MASTER LOCK 0-50X WELL
MW-9S	6/19/12	1156	1.7	–	5.68		
MW-9D	—	—	–	–	–	–	P&A 7/05
MW-10	6/19/12	0937	62	8.09	8.20	0.11	Sheen recovery well w/pump GAUGED W/WPS
MW-11	6/19/12	1223	1.5	–	6.76		
MW-12	6/19/12	1213	1.6	–	4.14		

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Data Collector: RANDOLPH CROLLING / VLAD LABENSKI

Revised: 12/19/2012

Huntsman Wells Gauging Information (Monitor Wells)

Well ID	Date	Gauge Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-13	—	—	—	—	—	—	P&A 6/99
MW-14	6/19/12	1140	3.7	—	5.37		
MW-15	6/19/12	1125	8	—	13.99		
MW-16	6/19/12	1230	2.7	—	12.14		
MW-17	6/19/12	1255	3.7	—	7.03		

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Data Collector: _____

Revised: 12/19/2011

Huntsman Wells Gauging Information (Well Points)

Well ID	Date	Gauge Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	(2) Well Bailed Yes/No	Comments
WP-1	6/20/12	8:57	70	N/A	8.99			HC odor
WP-2	6/20/12	9:48	2.7	N/A	7.09			
WP-3	6/20/12	9:55	3.7	N/A	6.70			
WP-7	6/20/12	8:39	1.6	N/A	11.19			
WP-14	6/20/12	~~8~~ 10:15	19	6.2 ish	~~8~~			DRY WELL TAR at bottom of well
WP-25	6/20/12	9:12	2	N/A	8.88			
WP-26S	6/20/12	9:30	2	N/A	8.51			
WP-26D	6/20/12	9:08	12	~~N/A~~	8.86			
WP-27S	6/20/12	8:52	38	~~N/A~~	~~13.1~~			HC odor
WP-27D	6/20/12	8:50	2.7	N/A	12.98			Some HC odor
WP-30	6/20/12	9:20	2.9	N/A	11.27			
WP-31	6/20/12	—	—	—	—	—	—	WELL CAP RUSTED ON CANNOT REMOVE LID
WP-32	6/20/12	8:45	1.9	N/A	Dry			DRY
WP-33	6/20/12	9:23	1.6	N/A	9.13			
MW-10	6/20/12	9:37	62	8.09	8.~~52~~	0.11		Recovery well w/pump

duct Thickness = (depth to water) - (depth to product)
Well Bailing field form
Water Equals Non Product Liquids

Collector: RANDOLPH ORTLUND / VLAD LABENSKI

Revised: 12/10/2008

HUNTSMAN

MW-10 Baildown and Recovery

TD=20 ft
DTW= 8.20 ft
DTP=8.09 ft
THK= 0.11 ft
Well Diameter 4"

6/21/2012

Time	DTW (ft)	Notes
10:30	20	Well Bailed Dry
10:35	17.25	
10:37	16.21	
10:38	15.73	
10:40	14.49	
10:42	13.13	
10:44	12.15	
10:48	11.24	
10:50	10.73	
10:52	10.73	
11:05	9.25	
11:10	8.81	
11:15	8.59	
11:20	8:42	
11:25	8.34	No Product Gauged after recovery

HUNTSMAN
MW-10 BAILDOWN TEST
AND PRODUCT RECOVERY
6/21/12

Time	DTW	Time	DTW
TD-20	N/A	11:05	9.25
10:30	Empty	11:10	8.81
10:35	17.25	11:15	8.59
10:37	16.21	11:20	8.47
10:38	15.73	11:25	8.34
10:40	14.49		
10:42	13.13		
10:44	12.15		
10:48	11.24		
10:50	10.73		
10:52	10.35		

LOW FLOW SAMPLING SHEET

Well: MW-35
Location: HUNTSMAN
Date: 6/19/12
Samplers: RANDALL HARRIS

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
9/12	1148	5.14	16.50	4	UNK	1.7	0	—	—	
9/12	1450	~~5.35~~								DEDICATED PUMP

Well Purging Record 6.35

Date	1530 Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) mS/cm	Dissolved Oxygen (mg/L)	Redox Potential (mV) ORP mV	Turbidity (NTU)	DTW (ft-toc)	Comments
9/12	~~1450~~	Initial	7.19	25.16	11.1	1.85	-100	~~2.38~~	5.35	0.45 L/M 5/5 @ 20psi
	1535		7.21	22.77	11.5	1.45	-133	2.79	5.43	~ 275 mL/MIN
	1540		7.25	20.11	11.4	1.02	-160	2.26	5.75	0.275 L/MIN
	1545		7.21	20.99	11.4	0.97	-161	1.96	5.97	
	1550		7.26	20.42	11.4	0.91	-163	2.39	6.04	0.325 L/MIN
	1555		7.24	20.61	11.3	0.89	-165	2.33	6.08	
	1600		7.24	20.43	11.3	0.76	-169	3.41	6.11	
	1606		7.28	20.41	11.3	0.69	-171	2.7	6.15	
	1611		7.26	20.53	11.3	0.65	-169	1.71	6.16	
	1615		7.26	20.57	11.2	0.61	-171	2.01	6.17	
			PURGED ~ 3.5 GALS							
			• PURGE WATER: EARTHY (ODOR) ODOR							
			CLEAR PURGE WATER							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
9/12	1615							MW-35	BTEX	HCl	ICe
9/12	1735	CLOSED UP WELL'S	FB-1					FB-1	PAHs	—	
									Pb	HNO_3	
9/12	1520	FB-1	SET UP FIELD BLANK (DISTILLED WATER) AT MW-35								

LOW FLOW SAMPLING SHEET

ell: MW-3D
ocation: HUNTSMAN
Date: 6/19/12
Samplers: RANDALL ARCHULETA

ll Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
9/12	1150	5.04	37.50	4	UNK	1.7	0	–	–	
	1640	4.98								DEDICATED PUMP

ll Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
9/12	1645	Initial	7.39	25.53	16.5	0.56	-144	3.96	4.98	0.3 L/m 20/10 @ 20 psi
	1651		7.22	25.21	18.5	0.63	-127	4.29	5.03	~0.2 L/m 15/5
	1655		7.19	24.59	19.0	0.64	-131	3.48	5.09	0.3 L/m 10/5
	1700		7.21	23.22	19.0	0.62	-133	3.17	5.10	
	1708		7.20	22.42	19.2	0.57	-134	3.28	5.11	
	1712		7.20	22.78	19.1	0.52	-135	2.30	5.12	
	1718		7.19	22.63	19.2	0.49	-136	2.21	5.13	
			PURGED ~2 GALS							
			PURGE WATER FORMED (DIRT) CLEAR							DOOR

mpling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
9/12	~~1705~~	~~1720~~						MW-3D	BTEX	HCl	ICe
	1720								PAHs	–	
								EB-1	Pb	HNO_3	
9/12	1705	EB-1	RIVER SAMPLER (DISTILLED WATER)								

LOW FLOW SAMPLING SHEET

ell: RIVER UPSTREAM
ocation: HUNTSMAN

Date: 6/19/12
Samplers: RANDALL CRAWFORD
RIVER FLOW - HIGH

ll Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
9/12	1655									RIVER SAMPLER - POLY

ll Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
9/12	1730	Initial	8.57	29.38	-81	5.85	-109	130	-	JUST BELOW SURFACE CUP FACING UPSTREAM
		NO APPARENT ODOR CLOUDY WATER (SILT)								

npling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
9/12	1655				RIVER	UPSTREAM			BTEX	HCl	1 ea
									PAHs	-	
									Pb	HNO_3	

LOW FLOW SAMPLING SHEET

: RIVER DOWNSTREAM
ation: HUNTSMAN
Date: 6/19/12
Samplers: R. GONZALEZ, C. RAMIREZ

nformation

te	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12	1715									RIVER SAMPLER - POLY

Purging Record

MSEM

te	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12	1745	Initial	8.73	31.33	0.820	5.19	33	150	—	
			NO APPARENT ODOR							
				CLAY WATER (SILT)						

ling Record

e	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12	1715				RIVER DOWNSTREAM				BTEX	HCl	ICE
									PAHs	—	
									Pb	HNO_3	

evised:07/10/2007

LOW FLOW SAMPLING SHEET

Well: ~~MW-07~~ MW-7 Date: 6/25/12

Location: HUNTSMAN Samplers: RANDOLPH ORTEGA

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
6/12	1130	3.97	15.50	4	UNK	2.4	0	—	—	
26/12	0830	3.94								DEDICATED PUMP

Well Purging Record

mS/cm

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
26/12	0850	Initial	7.25	23.00	8.81	1.82	-128	1.67	3.94	0.15 L/m @ 20:45; 20/16
	0855		7.30	23.15	9.06	1.02	-142	0.92	4.09	0.175 L/m
	0905		7.34	23.33	9.10	0.69	-156	0.54	4.39	~~0.2 L/m~~
	0910		7.35	23.40	9.15	0.56	-162	0.74	4.59	
	0915		7.38	23.44	9.19	0.48	-166	0.72	4.69	
	0920		7.35	23.59	9.31	0.42	-174	0.31	4.78	
	0925		7.37	23.64	9.36	0.40	-177	0.31	4.82	
	0930		7.34	23.71	9.34	0.37	-181	0.32	4.90	
		PURGED ~ 2 GALS								
				PURGE WATER FOAMY (DIRTY) DOOR						
					CLEAR W/ SLIGHT YELLOW TINT					

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
26/12	0930							MW-7	BTEX	HCl	ICE
26/12	1615	COMPOSITE FB-2 VOAs						FB-2	PAHs	—	
									Pb	HNO_3	
27/12	~~0845~~	FB-2	SET OUT @ MW-7								
			DISTILLED WATER								

LOW FLOW SAMPLING SHEET

ll: MW-4
cation: HUNTSMAN

Date: RANDOLPH ARTLUNKS
Samplers: 6/20/12

l Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
9/12	1136	~~18.00~~	~~4~~	~~UNK~~						
		3.75	18.00	4	UNK	3.7	0	–	–	DEDICATED PUMP

l Purging Record

mS/cm

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
20/12	1028	Initial	7.33	24.75	14.5	2.06	-162	1.49	3.70	0.2 L/M 20/10 @ 20 psi
	1035		7.22	24.39	14.6	~~6.95~~	-154	0.46	3.90	
	1042		7.16	24.69	14.9	0.71	-147	0.78	3.95	0.225 L/M
	1048		7.12	24.13	14.8	0.58	-149	0.27	4.03	
	1055		7.15	24.35	14.9	0.45	-152	0.61	4.05	
	1100		7.11	24.31	14.9	0.38	-152	0.10	4.05	
			PURGE ~ 2.0 GALS							
			PURGE WATER EARTHY (ODOR) ODOR CLEAR							

mpling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
2/12	1100							MW-4	BTEX	HCl	ICE
								FB-2	PAHs	–	
									Pb	HNO_3	
2/12	1115	FB-2 (DISTILLED WATER)				WATER					

LEVEL PROBE

LOW FLOW SAMPLING SHEET

Well: MW-14
Location: HUNTSMAN
Date: 6/20/12
Samplers: RANDALL ARTHUR

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
6/12	1140	5.37	26.10	4	UNK	3.7	0	—	—	
6/12	1315	5.18								DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
0/12	1328	Initial	7.13	30.22	18.5	1.57	-133	0.82	5.18	0.35 L/M @ 20 psi 10/5
	1335		7.12	27.42	19.1	0.76	-52	0.36	5.20	0.3 L/M
	1340		7.09	26.87	19.1	0.63	-152	0.48	5.22	
	1345		7.05	26.93	18.9	0.50	-150	0.31	5.22	
	1350		7.08	26.45	18.6	0.44	-151	0.11	5.23	
	1355		7.06	26.44	18.3	0.37	-150	0.23	5.24	
	1400		7.04	26.59	18.2	0.34	-149	0.29	5.25	
				PURGED ~3 GALS						
				PURGE WATER CLEAR						

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
6/12	1400							MW-14	BTEX	HCl	ICE
									PAHs	—	
									Pb	HNO_3	

LOW FLOW SAMPLING SHEET

ll: MW-9S
cation: HUNTSMAN

Date: 6/20/12
Samplers: RONALD ORTEGA

Information

ate	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
9/12	1156	5.68	15.50	4	WMK	1.7	0	0	0	
0/12	1510	5.75								DEDICATED PUMP

Purging Record

mS/cm

ate	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
0/12	1515	Initial	7.30	25.05	15.4	1.01	-153	0.27	5.75	0.45 L/m 10/5 @ 20 psi
	1520		7.32	23.13	15.4	0.29	-174	0.00	5.80	0.425 L/m
	1525		7.28	23.01	15.3	0.27	-174	1.30	5.80	
	1530		7.30	23.04	15.1	0.24	-179	1.11	5.90	
	1535		7.32	23.01	15.0	0.22	-179	0.17	5.90	
	1540		7.30	22.82	14.9	0.21	-178	0.62	5.91	
			PURGED ~ 3 GALS							
			PURGE WATER TEMPORARY (DIRT) ODOR							
			CLOUDY W/ SILTS - YELLOW/TAN							

pling Record

ate	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
9/12	1540							MW-9S	BTEX	HCl	ICe
									PAHs	—	
									Pb	HNO_3	

LOW FLOW SAMPLING SHEET

Well: MW-15 Date: 6/21/12

Location: HUNTSMAN Samplers: RANDOLPH CROZIER

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
6/12	1125	13.99	35.20	4	UNK	8	0	-	-	
6/12	0730	14.00								DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
6/12	0810	Initial	7.04	24.75	9.05	5.14	-109	1.14	14.00	0.35 L/m 10/5 @ 20 psi
	0815		7.07	25.73	10.07	1.21	-151	~~1.51~~	14.02	0.325 L/m
	0822		7.11	26.30	11.1	1.04	-153	1.71	14.05	0.25 L/m
	0827		7.15	26.16	10.9	0.77	-158	0.87	14.05	0.3 L/m 7/3 @ 25 psi
	0832		7.13	25.90	10.9	0.59	-158	0.78	14.05	
	0837		7.16	26.01	10.7	0.51	-159	0.59	14.05	
	0840									
				PURGED 2.5 GALS						
				PURGE WATER FARADAY (DIRTY) ODOR CLEAR						

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/ cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
6/12	0840							MW-15	BTEX	HCl	ICE
								FB-2	PAHs	~~PAHs~~	
									Pb	~~Pb~~	HNO_3
6/12	0730	FB-2 (DISTILLED WATER) @ MW-15									

SEALED 1335

Revised:07/10/2007

LOW FLOW SAMPLING SHEET

ell: MW-6D
cation: HINDSMAN

Date: 6/21/12
Samplers: RANDOLPH OROZCO

ll Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
9/12	1200	5.95	38.0	4	UNK	1.6	0	—	—	
/12	0900	6.00								DEDICATED PUMP

ll Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) mS/cm	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
/12	0935	Initial	7.37	27.93	18.6	1.46	72	2.13	6.00	0.3 L/m 10/5 @ 20 psi
	0944		7.29	26.19	18.7	0.84	-14	1.75	6.03	0.35 L/m
	0957		7.39	25.36	19.0	0.54	-83	0.96	6.05	
	1003		7.38	25.22	19.0	0.46	-87	0.04	6.07	
	1008		7.32	25.08	19.4	0.40	-87	0.54	6.09	
	1013		7.30	25.29	19.0	0.36	-89	0.57	6.12	

PURGED ~3 GALS

PURGE WATER ~~BROWN~~ (DIRT) ODOR ~~CLEAR~~ CLEAR

pling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
/12	1015							MW-6D	BTEX	HCl	ICE
									PAHs	—	
									Pb	HNO3	

LOW FLOW SAMPLING SHEET

Well: MW-65
Location: HUNTSMAN
Date: 6/21/12
Samplers: RANDOLPH GROUND

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
19/12	1204	5.95	17.00	4	UNK	1.6	0	—	—	
21/12	1030	~~6.07~~								DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) mS/cm	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
~~50~~	1050	Initial	7.12	~~28.29~~	~~108~~ 12.07	0.58	-108	2.72	6.07	0.25 L/m 20/10 @ 20 psi
1/12	1100		7.08	28.86	11.6	0.35	-154	1.31		
	1106		7.12	29.12	11.5	0.25	-162	1.16		0.2 L/m
	1112		7.14	29.34	11.4	0.21	-167	0.78		
	1117		7.06	29.52	11.4	0.18	-164	0.91	~~7.39~~	
									7.39	
									8.08	
				PURGE ~3 GALS						
				PURGE CLEAR	WATER ~~ENERGY~~	~~ENERGY~~	Y (ORP) BELOW	ODOR APPEARANCE		

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
1/12	1120							MW-65	BTEX	HCl	TCE
	1120						MW-65	MS	PAHs	—	
↓	1130						MW-65	MSD	Pb	HNO_3	
2/12	0800							(DUP-1)			

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Chain of Custody Form

COC ID: 56769

ALS Environmental

ALS Project Manager:

ALS Work Order #:

Customer Information

Purchase Order #	
Work Order #	
Company Name	ERM Southwest Inc.
Report To	~~Brad Stokes~~ JENNIFER WARFIELD
Address	~~142 Bermuda~~ 1206 EAST 9TH ST STE 1700 AUSTIN, TX
City/State/Zip	~~Corpus Christi, TX 78411~~ 78701
Phone	~~(361) 767-9203~~ 512-374-2224
Fax	
e-Mail Address	~~brad.stokes@erm.com~~ JENNIFER.WARFIELD@ERM.COM

Project Information

Project Name	Huntsman
Project Number	~~102618~~ 0137452
Bill To Company	ERM Southwest Inc.
Invoice Attn	~~Brad Stokes~~
Address	~~142 Bermuda~~ SAME
City/State/Zip	~~Corpus Christi, TX 78411~~
Phone	(361) 737-9203
Fax	
e-Mail Address	brad.stokes@erm.com

Parameter/Method Request for Analysis

A	BTEX 8021)
B	Total Metals (6020/7000) Pb
C	Pesticides, Chlorinated (8081)
D	
E	
F	
G	
H	
I	
J	

#	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
	MW-35	6/19/12	1615	WATER	HCl	3	X										
	↓	↓	↓	↓	2,8	1		X									
					8	2			X								
	MW-1	6/19/12	1735	WATER	1,8	3	X										
	MW-20	6/19/12	1720	WATER	1,8	3	X										
	↓	↓	↓	↓	2,8	1		X									
					8	2			X								
	MW-[illegible]	6/19/12	1655	WATER	1,8	3	X										
					2,8	1		X									
					8	2			X								

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Day TAT	
Relinquished by:	Date: 6/20/12	Time: 0800	Received by:		
Relinquished by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

Please Print & Sign

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☑ Std 10 W.K. Days ☐ 6 W.K. Days ☐ Other ☐ 3 W.K. Days ☐ 24 Hour

Results Due Date:

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☐ Level II Std QC ☑ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846 QC
☐ 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

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ALS Environmental

Chain of Custody Form

Page 2 of 5

COC ID: 56769

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	See p. 1	Project Name	Huntsman	A	BTEX (8021)
Work Order		Project Number	10.010	B	Total Metals (6020/7000) Pb
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	Pesticides, Chlorinated (8081)
Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	
Address	442 Bermuda	Company Address	442 Bermuda	E	
				F	
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Company Fax		I	
e-Mail Address	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
~~FB~~ RIVER-DOWNSTREAM	6/19/12	1715	WATER	1	3	X										
				2,5	1		X									
				8	2			X								
FB-1	6/19/12	1705	WATER	1,8	3	X										
MW-7	6/21/12	0730	WATER	1,5	3	X										
				2,8	1		X									
				8	2			X								
MW-4	6/20/12	1100	WATER	1,5	3	X										
				2,8	1		X									
				5	2			X								

Please Print & Sign: [illegible]

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☑ Std 10 Wk. Days ☐ 5 Wk. Days ☐ Other ☐ 2 Wk. Days ☐ 24 Hour

Results Due Date:

Relinquished by: [illegible] Date: 6/21/12 Time: 0800 Received by:

Relinquished by: Date: Time: Received by (Laboratory):

Received by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: 10 Day TAT

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level I SW 846 / CLP ☐ TRRP-Checklist
☐ Level II SW 846 / CLP ☐ TRRP-Level IV
☐ Level III / IV SW 846 / CLP
☐ Other / NELAC

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

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ALS Environmental

Chain of Custody Form

COC ID: 56771

ALS Project Manager:	ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	COC Pg 1	Project Name	Huntsman	A	BTEX (8021)
Work Order		Project Number	102040	B	Total Metals (6020/7000) Pb
Company Name	ERM Southwest Inc.	Bill To Company	ERM Southwest, Inc.	C	Pesticides, Chlorinated (8081)
Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	
Address	142 Bermuda	Address	142 Bermuda	E	
				F	
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	# Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
B-2	6/20/12	1615	WATER	1,8	3	X										
B-2	6/20/12	1115	WATER	1,8	2	X										
MW-14	6/20/12	1400	WATER	1,8	3	X										
	↓	↓	↓	2,8	1		X									
	↓	↓	↓	8	2			X								
MW-TS	6/20/12	1540	WATER	1,8	3	X										
	↓	↓	↓	2,8	1		X									
	↓	↓	↓	8	2			X								
B-3	6/21/12	1225	WATER	1,8	2	X										

Relinquished by: Please Print & Sign	Date:	Time:	Received by:	Shipment Method	Required Turnaround Time: (Check Box)	Results Due Date:
H. Coffman	6/21/12	0800		FAX	☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other	
Relinquished by: H. Coffman	Date: 6/22/12	Time: 0800	Received by:		Notes: 10 Day TAT	
Received by (Laboratory):	Date:	Time:	Checked by (Laboratory):		Cooler ID	Cooler Temp:

QC Package: (Check One Box Below)
☐ Level II Std QC ☑ TRRP Check List
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846 QC/Raw Data
☐ 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

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Chain of Custody Form

Page 4 of 5

COC ID: 56770

ALS Environmental

ALS Project Manager:

ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	See P. 1	Project Name	Huntsman	A	BTEX 8021
Work Order		Project Number	102086	B	Total Metals (6020/7000) Pb
Company Name	ERM Southwest Inc.	Bill To Company	ERM Southwest Inc.	C	Pesticides, Chlorinated (8081)
Report To	Brad Stokes	Invoice Attn	Brad Stokes	D	
Address	442 Bermuda	Address	442 Bermuda	E	
City/State/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
Phone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
e-Mail Address	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Item	Sample Description	Date	Time	Matrix	Preserv.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-15	6/21/12	0840	WATER	1,8	3	X										
2					2,8	1		X									
3					8	2			X								
4	MW-6D	6/21/12	1015	WATER	1,8	3	X										
5					2,8	1		X									
6					8	2			X								
7	MW-6S	6/21/12	1120	WATER	1,8	3	X										
8					2,8	1		X									
9					8	2			X								

Sampler(s) Please Print & Sign: [illegible]

Shipment Method: FedEx

Required Turnaround Time: (Check Box) 10 WK Days | 5 WK Days | 3 WK Days | 24 Hour

Results Due Date:

Relinquished by: [illegible] Date: 6/21/12 Time: 1500 Received by:

Relinquished by: [illegible] Date: Time: Received by (Laboratory):

Received by (Laboratory): Date: Time: Checked by (Laboratory):

Notes: 10 Day TAT

Cooler ID	Cooler Temp:

QC Package: (Check One Box Below)

- Level I Std QC
- Level II Std QC/Raw Data
- Level III Std QC/Raw Data
- Level IV
- TRRP Checklist
- TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

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ALS Environmental

Chain of Custody Form

COC ID: 56773

ALS Project Manager: | ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Order	COC 2, 1	Project Name	Huntsman	A	BTEX (8021)
Order		Project Number	102010	B	Total Metals (6020/7000) Pb
Name	ERM Southwest Inc.	Bill To Company	ERM Southwest Inc.	C	Pesticides, Chlorinated (8081)
ort To	Brad Stokes	Invoice Attn	Brad Stokes	D	
dress	442 Bermuda	Address	442 Bermuda	E	
				F	
e/Zip	Corpus Christi, TX 78411	City/State/Zip	Corpus Christi, TX 78411	G	
hone	(361) 737-9203	Phone	(361) 737-9203	H	
Fax		Fax		I	
dress	brad.stokes@erm.com	e-Mail Address	brad.stokes@erm.com	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
w-GEMS	6/21/12	1120	WATER	1,8	3	X										
				2,5	1		X									
				6	2			X								
w-GEMSD	6/21/12	1120	WATER	1,8	3	X										
				2,5	1		X									
				6	2			X								
MW-1	6/21/12	0800	WATER	1,8	3	X										
				2,5	1		X									
				6	2			X								
TRIP BLANK	—	—	WATER	1,8	2	X										

Please Print & Sign

Shipment Method: FEDEX

Required Turnaround Times: (Check Box) — 10 Std 10 WK Days | 5 WK Days | Other: 2 WK Days | 24 Hour

Results Due Date:

by:	Date: 6/21/12	Time: 0800	Received by:	
by:	Date:	Time:	Received by (Laboratory):	
boratory):	Date:	Time:	Checked by (Laboratory):	

Notes: 10 Day TAT.

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

- Level I SW-846
- Level II Std QC/Raw Data
- Level III SW-846/CLP
- Other EDD

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

DATE	7/20/12
SHEET	1 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HUNTSMAN-BRICKLINK SITE	0161236

FIELD ACTIVITY SUBJECT:
GW SAMPLING AND DRUM DISPOSAL

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1100 LOAD UP TRUCK - DEPART FOR SITE - BUY ICE:
- REVIEWED AND SIGNED DAILY SAFETY (BRIEFING FORMS)
- REVIEWED TRA AND THAS FOR SITE ACTIVITIES
GROUND WATER SAMPLING AND DRUM DISPOSAL

1230 ARRIVED ON SITE
ORGANIZE DRUMS FOR PICK-UP; SEPARATE FAT [illegible] DRUM, PURGE WATER

1300 SET UP AT MW-5 FOR LOW FLOW PURGE AND SAMPLE

1330 SET OUT FIELD BLANK FB-1 AT MW 5

1445 SAMPLE TIME MW-5 3 VOAS HCL, ICE
ALL SAMPLES (3 WELLS, FB-1, TB) BTEX ANALYSIS
PICKED UP FB-1

1520 SAMPLE TIME MW-5

1530 SAFETY KLEEN CALL; H+S REVIEW WITH DRIVER OMAR VELASQUEZ

1540 SK TRUCK GOT STUCK IN SOFT GROUND, BACKHOE WAS ABLE TO DIG HIM OUT

1600 SK TOOK SAMPLE (MW-10) FROM PREVIOUSLY REMOVED PRODUCT AND WATER FOR DISPOSAL ANALYSIS

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
NONE	NO

WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:
PARTLY CLOUDY/SUNNY, DRY TO MODERATE HUMIDITY, 85-100°F, BREEZE / SW 5-15 mph	HOURLY CALL / TEXT TO PM JENNIFER MARTELL WHILE ON SITE PER TRA PROTOCOL

PERSONNEL ON SITE: SAFETY KLEEN: OMAR VELASQUEZ
ERM: RANDOLPH ORTEGA, VLAD LAMBERT

SIGNATURE Randolph Ortega

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ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 56772

ALS Project Manager: | ALS Work Order #:

Customer Information

Purchase Order	
Work Order	
Company Name	ERM Southwest, Inc.
Report To	~~Brad Stokes~~ JENNIFER WARFIELD
Address	~~442 Bermuda~~ 206 EAST 6TH STREET SUITE 1700 AUSTIN, TX 78701 ~~Corpus Christi, TX 78411~~
Phone	~~(361) 737-9203~~ 512-374-2324
Fax	
e-Mail Address	~~brad.stokes@erm.com~~ JENNIFER.WARFIELD@ERM.COM

Project Information

Project Name	Huntsman
Project Number	102010
Bill To Company	ERM Southwest, Inc.
Invoice Attn	Brad Stokes
Company Address	442 Bermuda
City/State/Zip	Corpus Christi, TX 78411
Phone	(361) 737-9203
Fax	
e-Mail Address	brad.stokes@erm.com

Parameter/Method Request for Analysis

A	~~BTEX (8021)~~
B	~~Total Metals (6020/7060) Pb~~
C	~~Pesticides, Chlorinated (8081)~~
D	
E	HOLD FOR ANALYSIS
F	
G	
H	
I	
J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
W-10 NAPL	6/21/12	1400	NAPL	1,8	3											
W-10 DISSOLVED PHASE	6/21/12	1400	WATER	1,8	3											

THIS COOLER WILL NOT BE SHIPPED 48 HRS

Please Print & Sign: JENNIFER WARFIELD

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) 2 Std. 10 WK Days | 5 WK Days | Other ___ WK Days | 24 Hour

Results Due Date:

Relinquished by:	Date: 6/22/12	Time: 0800	Received by:	
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Laboratory:	Date:	Time:	Checked by (Laboratory):	

Notes: 10 Day TAT.

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- Level I Std QC
- Level II Std QC + Raw Data
- Level III Std QC + TRRP Level III
- Level IV Std QC + TRRP Level IV
- Other (QC)

TRRP Check Is

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

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DATE	7/20/12
SHEET	2 of 2

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
HAWTHORNE - [illegible] SITE	[illegible]

FIELD ACTIVITY SUBJECT:
GW SAMPLING AND DRUM DISPOSAL

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1625 I SIGNED WASTE MANIFEST.
SK OFFSITE WITH 3 DRUMS:
- PURGE WATER ~ 55 GALLONS (FULL)
- O-SOX
- PPE

1700 [illegible]

1715 PLACED [illegible] JUNE 2012
3 DRUMS ON SITE:
- PURGE [illegible]
- PPE
- [illegible] MW-10

DRUM DISPOSAL - 3, 5, 10

1720 [illegible]
- [illegible] LOCK [illegible] 8 AND [illegible]
- WILL [illegible]
- COMPOUND AND MAIN GATE LOCKED
- NO UNEXPECTED ISSUES

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
See P. 1	P. 1

WEATHER CONDITIONS:	IMPORTANT TELEPHONE CALLS:
P. 1	P. 1

PERSONNEL ON SITE: P. 1

SIGNATURE: [signature]

118 2437

0161236 HUNTSMAN GW SAMPLE 7/20/12 F

1100 LOAD UP TRUCK - DEPART FOR SITE

OBJECT: GW SAMPLE MW-5, 8, 10
- SAFETY KLEEN PICKUP DRUMS

PERSONNEL: FEM - RANDY OSTLUND
VLAD LABINSKI

EQUIP: T-84, CELL, TOOLKIT, PUMP
WL, QUALITY, PID, LOCKS

WEATHER: CLR, PRTY CLDY, SUNNY, MED
HUMIDITY DRY, HOT, BREEZY
85-100°F, SW 5-15 MPH

H&S: REVIEWED AND SIGNED
DAILY SAFETY BRIEFING -
REVIEWED JHA, SOPS

1140 DEPART FOR HUNTSMAN
BUY ICE, FLUIDS

1230 ARRIVED ON SITE
CALLED JENNIFER; LEFT
MSG, SENT TEXT

1235 ORGANIZE DRUMS FOR PICKUP
1) PURGE WATER
1) PPE
1) O-SOX

1300 SET UP MW-5 TO
LOFLOW PURGE AND
SAMPLE W/ PERISTALTIC PUMP

Randolph Ostlund 7/20/12

119 2437

0161236 HUNTSMAN GW SAMPLE 7/20/12 F

1415 SAMPLE TIME MW-5
BTEX HCL ICE 3x40ml VOAS

1330 SET OUT FB-1 AT MW-5

1415 PICKED UP FB-1

1430 ARRIVED MW-08 SET UP TO
PURGE AND SAMPLE WELL

1520 SAMPLE TIME MW-8
BTEX HCL ICE 3x40ml VOAS

1530 SAFETY KLEEN ON SITE

1535 H&S BRIEFING WITH SK
DRIVER OMAR SIGNED DAILY FORM
- WEAR GLOVES, LIFTING, SAFE DRIVE

1540 SK TRUCK GOT STUCK IN
SOFT SAND BY COMPOUND
ABLE TO GET TRUCK OUT - OK

1600 SK TOOK NAPL SAMPLE MW-10
FOR ANALYSIS.
- PICKED UP 3 DRUMS

1625 SIGNED MANIFESTS
SK OFFSITE

1630 SET UP AND SAMPLE MW-10

1700 SAMPLE TIME MW-10:
- BTEX HCL ICE 3x40ml VOAS
- PLACED PURGE WATER IN DRUM
- PPE IN GARBAGE BAG IN COMPANY

Randolph Ostlund 7/20/12

2437

0161236 Hunsman GW Sample 7/20/12 F

3 Drums in Compound:

- PPE
- MAPL
- Purge Water

- View ERM locks on main gate and MW-8

1720 Offsite - main gate and compound gates locked

- Vlad off to airport
- I'm going back to ERM office
- Called Jennifer and left msg we are offsite.
- I will ship samples Monday keep on ice in ERM office

1730 Jennifer acknowledges msg we are offsite

- Returning w/ O-Sox to store in ERM warehouse with 2nd O-Sox and bulk O-Sox

7/20/12 Randolph [signature]

ERM

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
7/26/12	RANDOLPH ORTLUND	HUNTSMAN	0161236

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

STF - UNEVEN SOFT GROUND, SLOPES, BURROWS, GRAVEL, PPE
DRIVING - TRAFFIC LAWS, SPD LIMITS, CLEAN WINDOWS/MIRRORS
BACKIN, BIG PICTURE, EMER BRAKE, 2S RULE, SEATBELTS
NAPL LIQUID - SPILL KIT, PID, UPWIND, NITRILE GLOVES
VOCS - UPWIND, PID
LIFTING - PROPER POSITIONING, HELP, LITER LOADS
PINCH POINTS - LEATHER GLOVES, POSITION, RIGHT TOOL

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

GAUGE AND SAMPLE WELLS FW.
DISPOSE DRUMS SAFETY KLEEN
INSECTS, ANIMALS FIRST AID KIT, PPE, SAFE DISTANCE
WILD DOGS BACK WINDOW GLOVES
HASP JSA JHA

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

HOUSE KEEPING
BORDER PATROL

ATTENDEES (Print name and initial)

RANDOLPH ORTLUND RFO	
Mac Takeusic ERM	VC
[illegible]	

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant ~~0128122~~ 0161236
Meeting Date & Time:	7/20/12 1700

Document Routing	
SSO RANDALL GROUND	Retain copy in site health & safety file.

1. Who lead the meeting today?

RANDALL GROUND

2. What work will be conducted on site today by whom?

Work Task	Conducted By
SAMPLE GW WELLS DRUM DISPOSAL	RANDALL GROUND VLAD LABINSKI

3. What overlapping operations will occur today?

GW WELL SAMPLING
DRUM DISPOSAL

4. Any follow-up from previous Major Incidents, Near Misses, Unsafe Acts or Unsafe Conditions discussed today?

NONE

5. What additional safety topics were covered?

HEAT/UV - SHADE, PPE, FLUIDS
DRUM DISPOSAL - LABEL, FILES

ERM

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	

6. Are there any new / short-service personnel on site today?

SAFETY KLEEN

ERM

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	

7. Who attended the safety meeting today?

Name	Company	Signature
VLAD LABENSKI	ERM	

Meeting documented by...

Name: Randolph Dotson

Signature: Randolph Dotson

LOW FLOW SAMPLING SHEET

ell: MW-5 | Date: 7/20/12
cation: HAWKMAN | Samplers: RANDOLPH CRISLAND

ll Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
20/12	1315	4.90	15.00	4	UNK	7.4	0	–	–	SAMPLE DEPTH 10' BTOC PERISTALTIC PUMP

ll Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
20/12	1338	Initial	8.67	25.4	18.2	2.0	~~25~~48	65.2	5.23	0.19L/m
	1343		8.63	27.2	18.7	1.3	31	70.3	5.45	
	1348		8.40	27.5	19.1	0.8	-11	62.2	5.63	0.3L/m
	1353		8.04	28.0	19.8	~~2.5~~0.4	-172	53.0	5.8	
	1358		7.97	27.9	19.9	0.7	-218	41.1	5.91	0.3L/m
	1404		7.87	28.1	18.8	0.8	-233	25.9	6.03	0.18L/m
	1410		7.76	28.8	17.9	0.9	-203	15.0	6.09	
	1415		7.78	28.6	17.8	0.9	-204	10.1	–	

~2 GALS PURGED
CLEAR SLIGHTLY YELLOW TINT
(DIRTY EARTHLY ORGANIC ODOR)

pling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
20/12	1415							MW-5	BTEX	HCl	ICE
20/12	1330-1415	FB-1 (DISTILLED WATER)						FB-1	BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

ell: MW-8
cation: HUNTSMAN

Date: 7/26/12
Samplers: RANDALL ORTUNO

ll Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
26/12	1440	4.74	14.65	4	UNK	10	0	-	-	SAMPLE(D) ~9' BTOC PERISTALTIC PUMP

ll Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
/12	1450	Initial	7.62	28.7	6.8	1.0	-266	43.8	5.09	0.25 L/m
	1455		7.47	29.5	7.8	0.7	-212	55.8	5.31	0.18 L/m
	1503		7.42	29.7	7.6	0.8	-210	39.4	5.57	
	1508		7.39	30.0	7.6	0.7	-214	35	5.81	
	1513		7.37	29.8	7.5	0.7	-206	22.7	6.0	
	1518		7.34	30.0	7.4	0.7	-200	22.1	6.09	
				~	1.25 GALS PURGE					
				CLEAR SLIGHTLY EARTHY	(DIRT)	-YELLOW TINT ORGANIC			ODOR	

pling Record

ate	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
26/12	1520							MW-8	BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

Well: MW-10
Location: HUNTSMAN
Date: 7/26/12
Samplers: [illegible]

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
7/26/12	1630	7.98	19.84	4	UNK	16	0	—	—	SET SAMPLE DEPTH 13' bgs
		SHEEN DETECTED 0.01								PERISTALTIC PUMP

Well Purging Record

MS

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
7/26/12	1630	Initial	7.39	29.6	5.2	0.5	-42	3.78	8.12	
	1635		7.39	29.7	5.2	0.6	-83	1.92	5.45	0.275 L/m
	1642		7.37	25.4	5.2	0.6	-107	2.25	8.44	
	1647		7.39	25.4	7.8	0.7	-108	3.8	5.44	
	1652		7.37	25.4	8.4	0.5	-126	1.77	—	
	1658		7.42	25.4	8.5	0.7	-134	1.43	—	
				~2 GAL PURGED						
					CLEAR W/ SLIGHT [illegible]					
					SLIGHT CHEMICAL ODOR					

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
7/26/12	1700							MW-10	BTEX	HCl	ICE

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
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 61248

ALS Environmental

ALS Project Manager:		ALS Work Order #:	

Customer Information		Project Information		Parameter/Method Request for Analysis	
Order		Project Name	Huntsman - Brickland	A	BTEX
Order		Project Number	0161236	B	
Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
ort To	Jennifer Warfield/Natalie Pickett	Invoice Attn	Jennifer Warfield	D	
dress	206 E. 9th Street	Address	206 E. 9th Street	E	
	Suite 1700		Suite 1700	F	
te/Zip	Austin, TX 78701	City/State/Zip	Austin, TX 78701	G	
Phone	(512) 459-4700	Phone	(512) 459-4700	H	
Fax	(512) 459-4711	Fax	(512) 459-4711	I	
dress	Jennifer.Warfield/Natalie.Pickett@erm.	e-Mail Address	Jennifer.Warfield/Natalie.Pickett@erm.	J	

Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
-5	7/20/12	1415	Water	1,8	3	X										☐
-8	7/20/12	1520	Water	1,8	3	X										☐
v-10	7/20/12	1700	Water	1,8	3	X										☐
-1	7/20/12	1415 1330 dup	Water	1,8	3	X										☐
3 TB-1	-		Water	1,8	2	X										☐

Please Email RESULTS TO [illegible]

Shipment Method: FEDEX

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

Results Due Date:

by:	Date:	Time:	Received by:	Notes: 10 Day TAT
By:	Date: 7/23/12	Time: 1400	Received by (Laboratory):	
aboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☑ TRRP CheckList
- ☐ TRRP Level IV

ve 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

DATE	12/11/12
SHEET	1 of

FIELD DAILY ACTIVITY LOG

PROJECT NAME: Huntsman - Brickland Site	PROJECT NUMBER: 60161236

FIELD ACTIVITY SUBJECT: GW Sampling - Semi-annual EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0645 Equipment calibrated & load truck
0815 All personnel @ ERM office
- Reviewed & signed HASP (Level 2), Travel Risk Assessment, JHA's, & daily forms.
0830 Load trucks w/ additional equipment. Depart for site
0910 Arrived onsite
0920 Open all wells & take PID readings & set up for GW Sampling
1200 Gauge sampling wells
1245 Set out field blanks FB-1 @ MW-3D
1445 Sample time MW-3D - 3 VOA's w/HCl, ice (all samples get BTEX analysis)
1515 EB-1 Equipment blank River sample cup
1530 - River upstream sample
1630 - River downstream sample
- MW-35 sample - pick up FB-1 (1645)
- close/lock wells
- purge water in drum + samples on ice
1745 Depart site

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
NONE	NONE
WEATHER CONDITIONS: cold to moderate cold, clear, sunny, dry, 30-60°F, slight breeze SW 0-5mph	IMPORTANT TELEPHONE CALLS: Hourly calls/texts to PM Jennifer Warfield while onsite per TRA protocal

PERSONNEL ON SITE:
ERM: Anna Hoessle, Randy Ortlund Huntsman: Ed Gunderson

SIGNATURE

DATE	12/12/12
SHEET	2 of

FIELD DAILY ACTIVITY LOG

PROJECT NAME:	PROJECT NUMBER:
Huntsman- Brickland Site	0161236

FIELD ACTIVITY SUBJECT:
GW Sampling - Semi-annual EVENT

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0730 Reviewed & signed daily H&S FORMS (ERM)
0740 Depart for site.
0805 Arrive onsite
- Set up for sampling @ MW-9S
- Gauged well points
0830 ED Gunderson onsite; review & sign H&S FORMS
0850 Calibrate & run standards on sampling parameter equipment
1025 Sample MW-9S (3 VOA's, HCl & ice, BTEX)
1100 Set up @ MW-7
1115 Set out field blank 2 (FB-2)
1225 Sample time MW-7 (3 VOA's, HCl & ice, BTEX)
1300 Set up @ MW-6D
1335 Sample time MW-6D (3 VOA's, HCl, ice, BTEX)
1340 Set up @ MW-6S
1450 Sample time MW-6S (3 VOA's, HCl, ice, BTEX)
1530 Set up MW-15
1635 Sample time MW-15
1700 Pick up FB-2
- Samples on ice
- Close lock wells
1730 Depart site BACK to office.

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
NONE	None
WEATHER CONDITIONS:	**IMPORTANT TELEPHONE CALLS:**
Cold → warm 30-60° F, dry, clear, sunny, slight breeze E 0-5mph	Hourly calls/texts to PM Jennifer Warfield while onsite per TRA protocal.

PERSONNEL ON SITE:
ERM: Anna Hoessle & Randy Ortlund HUNTSMAN: Ed Gunderson

SIGNATURE

DATE	12/13/12
SHEET	3 of

FIELD DAILY ACTIVITY LOG

PROJECT NAME: Huntsman - Brickland Site	PROJECT NUMBER: 0161236

FIELD ACTIVITY SUBJECT: GW Sampling - Semi-annual EVENT / NAPL Recovery

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0700 At ERM office; sign / review daily H&S FORMS
0755 Depart For Site
0825 Arrive onsite
- Ed Gunderson onsite, review & sign daily H&S FORMS
- CALIBRATE sample equipment

0945 Set up @ MW-14
1000 Set out FB-3 (field blank)
1040 Sample time MW-14 3 VOA's, HCl, ice, BTEX analysis for all wells
1100 Set up @ MW-4
1153 Sample time MW-4
1215 EB-2 (Equipment blank) water level probe
1240 Set up @ MW-5 (peristaltic pump)
1400 Sample time MW-5 & DUP-1 (duplicate)
1430 Set up MW-8
1515 Sample time MW-8
Sample time MW-8 MS
Sample time MW-8 MSD
Pick up FB-3
1545 Set up @ MW-10 FOR NAPL Bailing
1630 pumped, "bailed" MW-10 - water/LNAPL mix
1710 Sample time MW-10
- Clean up site, decon, all equipment,
- Empty purge water & PPE & WATER/LNAPL mix into designated drum
1750 Lock up & depart site for OFFICE

VISITORS ON SITE:	CHANGES FROM PLANS AND SPECIFICATIONS AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
NONE	None
WEATHER CONDITIONS:	**IMPORTANT TELEPHONE CALLS:**
CLEAR, sunny, cold -> warm 35-65°F, NS-15mph cold wind, dry; cloudy in afternoon	Hourly calls / texts to Jennifer Warfield while onsite per TRA protocal.

PERSONNEL ON SITE: ERM: Anna Hessle & Randy Ortlund Huntsman: Ed Gunderson

SIGNATURE

Daily Safety Meeting

ERM

Date	Meeting Facilitator	Project Name	Project Number
12/11/12	RANDY ORTLUND	Huntsman	0161236.03

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

- Slips, trips, fall - uneven ground, slope, gravel, soft ground
- Sunscreen, stay hydrated, dress warmly for mornings
- BioHAZARDS - BE aware of dogs (wild)
- Wear safety glasses, nitrile gloves, coveralls, spill kit - NAPL
- BE aware of soft sand areas when driving & obey speed limits
- Stay upwind & monitor w/ PID for VOC's
- Use leather gloves when pinch points are present

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

Reviewed & signed HASP
Reviewed & signed daily tailgate safety mtg.

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Gauge & Sample wells

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

BE aware of surroundings - Border patrol in the area

ATTENDEES (Print name and initial)

Ed Gunderson EG	
Randy Ortlund	Randolph Ortlund PEO
Anna Hoessle AH	

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	12/11/12 8:40am

Document Routing	
SSO	Retain copy in site health & safety file.

1. Who lead the meeting today?

RANDY ORTLUND

2. What work will be conducted on site today by whom?

Work Task	Conducted By
Gauging Sample wells Site overview; maybe fence inspection	Anna H. Randy O. Ed G.

3. What overlapping operations will occur today?

NONE - potentially

Groundwater Sampling
Gauging may or may not overlap

4. Any follow-up from previous Major Incidents, Near Misses, Unsafe Acts or Unsafe Conditions discussed today?

If rain occurs, need to evacuate site due to unstable boulders on slope

5. What additional safety topics were covered?

Cold temperatures - dress warmly in mornings
Awareness of wild dogs
Wear sunscreen, stay hydrated

ERM

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	12/11/12 08:30 am

6. Are there any new / short-service personnel on site today?

Anna Hoessle

~~Pat~~ Ed Gunderson

ERM.

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	

7. Who attended the safety meeting today?

Name	Company	Signature
RANDOLPH ORSTLAND	ERM	Randolph Orstland
ANNA HOESLE	ERM	
Edward Gendersor	Huntsman	Edward J Gunderson

Meeting documented by...

Name: RANDOLPH ORSTLAND

Signature: Randolph Orstland

Daily Safety Meeting

Date	Meeting Facilitator	Project Name	Project Number
12/12/12	RANDY Ortlund	Blackland Refinery Huntsman	0161236.03

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

- Slips, trips, falls
- Sunscreen, stay hydrated, dress warmly in mornings
- Biohazards - dogs, spiders
- NAPL - safety glasses, nitrile gloves, spill kit
- Soft sand in the afternoon after ground warms up
- Use leather gloves for pinch points
- VOCs - UPWIND, PID

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

HASP, JHAs, TJHAs

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Gage wells
Sampling

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

Be aware of Border patrol
BE aware of dust when driving up to others
BE aware of spiders around locks at well heads.

ATTENDEES (Print name and initial)

Anna Hoessle	
Randy Ortlund	Randolph Ortlund RLO
Ed Henderson	Edward L Henderson

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	12/12/12 07:15

Document Routing	
SSO	Retain copy in site health & safety file.

1. Who lead the meeting today?

RANDY Ortlund

2. What work will be conducted on site today by whom?

Work Task	Conducted By
Gauging Well Sampling	Anna H. Randy O. & Ama

3. What overlapping operations will occur today?

NONE

4. Any follow-up from previous Major Incidents, Near Misses, Unsafe Acts or Unsafe Conditions discussed today?

- Make sure lights are turned off on vehicles
- No other occurrances

5. What additional safety topics were covered?

- Continue to drink plenty of water
- Keep Sunscreen on
- Take Break as needed

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	

6. Are there any new / short-service personnel on site today?

NO

ERM

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	

7. Who attended the safety meeting today?

Name	Company	Signature
Randy Ortlund	ERM	Randolph Ortlund
Anna Hoessle	ERM	
Ed Gunderson	ERM	Edward J Gunderson

Meeting documented by...

Name: RANDOLPH ORTLUND

Signature: Randolph Ortlund

Daily Safety Meeting

ERM

Date	Meeting Facilitator	Project Name	Project Number
12/13/12	RANDY ORTLUND	BRICKLAND REFINERY HUNTSMAN	0161236.03

AWARENESS ISSUES (special EHS concerns, pollution prevention, recent incidents)

- Slips, trips, falls - soft sand, rocks, equipment, slopes, uneven ground
- Sunscreen, stay hydrated, dress warmly in mornings
- Biohazards - dogs, spiders
- NAPL - safety glasses, nitrile gloves, spill kits
- Soft sand in the afternoon after ground warms up
- USE LEATHER GLOVES FOR PINCH POINTS
- VOCs - upwind PID

OTHER ISSUES (HASP changes, new JHAs, attendee comments)

- Be aware of metal poles or scrap @ site when walking/driving
- BE AWARE OF RAIN - ~~PLANNED~~ FORECASTED FOR TOMORROW & high winds
- ~~Good~~ high traffic driving
- Safe driving - use signals, Be aware of surroundings & at site Be Aware of soft sand & uneven ground ~~seat belts~~

DISCUSSION OF DAILY ACTIVITIES/TASKS AND SAFETY MEASURES

Well Sampling - PPE - gloves, eye protection
LNAPL Bailing - PPE - gloves, eye protection

- Bring enough buckets w/ lids that fit

OPPORTUNITIES/SUGGESTIONS FOR IMPROVEMENT

- BE AWARE OF BORDER PATROL - GET OFF-SITE BEFORE DARK
- Check TIRES PERIODICALLY
- Good housekeeping
- Good lifting technique - bend @ knees, get help for heavy items

ATTENDEES (Print name and initial)

Anna Hoessle	~~Anna~~
Randy Ortlund	Randy Ortlund RO
Ed Gunderson	Edward Gunderson

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	12/13/12 07:30 & 08:00

Document Routing	
SSO	Retain copy in site health & safety file.

1. Who lead the meeting today?

RANDY ORTLUND / ANNA HOESSLE

2. What work will be conducted on site today by whom?

Work Task	Conducted By
Well Sampling	Anna & Randy
Bailing LNAPL	Anna & Randy
Site walk / Fence inspection	Contractor Valley Fencing

- only inspecting perimeter - Not coming onsite

3. What overlapping operations will occur today?

None

4. Any follow-up from previous Major Incidents, Near Misses, Unsafe Acts or Unsafe Conditions discussed today?

Check tires for mesquite thorns

5. What additional safety topics were covered?

- Rain forcasted & high winds for tomorrow - be aware of weather moving in
- Drink plenty of water
- Wear Sunscreen
- Be aware of surroundings

ERM

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	

6. Are there any new / short-service personnel on site today?

~~Yes = fence contractor~~ No - only around site perimeter

ERM

Daily Safety Meeting Documentation Form

Project Name:	Western Refining South Plant 0128122
Meeting Date & Time:	

7. Who attended the safety meeting today?

Name	Company	Signature
Anna Hoessle	ERM	
Randy Ortlund	ERM	Randolph Ortlund
Ed Gunderson	Huntsman	Edward J Gunderson
~~Fence Contractor~~		

Meeting documented by...

Name: Randolph Ortlund

Signature: Randolph Ortlund

516123G HUNTSMAN GW SAMPLE 7/20/12

3 DRUMS IN COMPOUND:
- PPE
- NAPL
- PURGE WATER
- NEW ERM LOCKS ON MAIN GATE AND MW-8

1720 OFFSITE - MAIN GATE AND COMPOUND GATES LOCKED
- VCAA OFF TO AIRPORT
- I'M GOING BACK TO ERM OFFICE
- CALLED JENNIFER AND LEFT VM WE ARE OFFSITE.
- I WILL SHIP SAMPLES MONDAY KEEP ON ICE IN ERM OFFICE

1730 JENNIFER GOURNOUR ACK WE ARE OFFSITE
- RETURNING W/O-SOX TO STORE IN ERM WAREHOUSE WITH 2ND O-SOX AND BULK O-SOX

7/20/12 Randolph Ortlund

~~516123G~~ HUNTSMAN GW SAMPLE 12/11/12

0630 ARRIVED ERM OFFICE
PREP FOR GW SAMPLING EVENT

OBJECT: SEMI-ANNUAL GW SAMPLING EVENT AT HUNTSMAN SITE

PERSONNEL: ERM - RANDY ORTLUND
- ANNA HOBSLE
HUNTSMAN - ED GUNDERSON

EQUIPMENT: T-84, TREMOL, GW SAMPLE EQUIP, OWI A, PID, TOOL KIT, WATER LEVEL, YSI TURBIDITY METER, CELL PHONE

WEATHER: COLD TO MOD COLD, CLR SUNNY, DRY 30-60°F, SLT BREEZE SW 0-5 MPH

HS: REVIEW AND SIGN HASP, JHAs, DAILY BRIEFING FORMS

0645 CALIBRATE PID, LOAD UP TRUCK, REVIEW SAFETY, DAILY BRIEFING, DISCUSS WORK TASKS

0700 ANNA ON SITE - ERM OFFICE

0730 ED ON SITE - ERM OFFICE

0815 REVIEWED AND SIGNED HASP LEVEL 2, JHAs, DAILY FORMS

0830 LOAD UP TRUCK - DEPART FOR SITE

0910 ARRIVED ON SITE - HUNTSMAN

Randolph Ortlund 12/11/12

(123) 2437

061236 HUNTSMAN GW SAMPLE 12/11/12 TH

0920 OPEN ALL WELLS AND CHECK W/ PID (MWs, WPs)
- ED DOING SITE WALK AROUND
- NOTIFIED JENNIFER (AM) WE ARE ON SITE
- SET UP FOR GW SAMPLING

1100 CALIBRATE GW SAMPLE EQUIP:
- LAMOTTE TURBIDITY METER 2020WE:
- STD 10.0 NTU READS 9.67 OK
- STD 0.0 NTU -0.18 OK
- YSI 600 XL
- PH STD 7.00 READ 7.04 OK
- PH STD 4.00 READ 4.04 OK
- PH STD 10.00 READ 9.95 OK
- ORP STD 240 MV READ 273 MV OK
- 718 uS/cm READ 0.734 mS/cm OK
- 1413 uS/cm READ 1.418 mS/cm OK

1200 FINISHED OPENING ALL WELLS AND CHECKING W/ PID
- GAUGE SAMPLING MWs IN ORDER FROM CLEAN TO DIRTY (BTEX LEVELS)
- GAUGE NON-SAMPLING MWs WITH WATER LEVEL

Randolph Oetlund 12/11/12

(123) 2437

061236 HUNTSMAN GW SAMPLE 12/11/12 TH

1230 SET UP TO SAMPLE MW-3S

1345 FB-1 (DISTILLED WATER) SET OUT AT MW-3D CLOSED 1650

1400 BEGIN P/S MW-3D

1445 SAMPLE MW-3D
- BTEX 3x40ml VOAs HCl, ICE

1450 SET UP P/S MW-3S MW-

1500 ANNA FINISHED GAUGING WELLS
- ALL WELLS LOCKED BACK UP

1515 EB-1 RIVER SAMPLER CUP ~~DIST~~ DISTILLED WATER (SAMPLE TIME)
BTEX 3x40ml VOAs HCl, ICE

1530 RIVER-UPSTREAM (SAMPLE TIME)
BTEX 3x40ml VOAs HCl, ICE

1620 RIVER-DOWNSTREAM SAMPLE TIME
BTEX 3x40ml VOAs HCl, ICE

1630 SAMPLE TIME MW-3S
BTEX 3x40ml VOAs HCl, ICE
- CLEAN UP
- CLOSE UP WELLS WPs MWs
- PURGE WATER IN DRUM

1745 DEPART SITE - EOD
BACK TO OFFICE / SAMPLES ON ICE

Randolph Oetlund 12/11/12

(124) 2437

016 1236 HUNTSMAN GW SAMPLE 12/12/12 WED
0700 ARRIVES ERM OFFICE W/ANNA
OBJECT: CONTINUE GW SAMPLING
PERSONNEL: ERM - RANDY ORTLUND
- ANNA HAESSLE
HUNTSMAN - ED GUNDERSON
EQUIP: T-84, RENTAL TRUCK, CELL, TOOL
KIT, GW SAMPLE KIT (WL, OWSA
P-PUMP, PID
WEATHER: COLD - WARM 30 - 60°F, DRY
CLR, SUNNY, SLT BREEZE, E 0-5 mph
H+S: REVIEW AND SIGN DAILY FORMS
0730 WERE UP REVIEWED AND SIGNED
DAILY H+S FORMS W/ANNA
0735 CALIBRATED PID:
- STA ISOBUTYLENE 100 ppm READ 99.1 OK
0740 DEPART FOR SITE
0805 ARRIVED ON SITE - HUNTSMAN
- GAUGE WPs NOT GAUGED
YESTERDAY
- SET UP AND P/S, MW-9S
- CALIBRATE EQUIP
0830 ED GUNDERSEN ON SITE
DISCUSSED H+S ISSUES SIGNED FORM
0850 TURBIDITY METER - LAMOTTE
STA 0.0 NTU READS 0.04 OK

Randolph Ortlund 12/12/12

(125) 2437

016 1236 HUNTSMAN GW SAMPLE 12/12/12 WED
STA 10.0 NTU READS 10.01 OK
YSI METER:
- PH STD 7.00 READS 7.05 OK
4.01 4.11 OK
10.01 10.10 OK
- ORP STD 240 mV READ 283 OK
- COND STD 718 µS/cm READ 0.754 mS/cm OK
1413 µS/cm 1.407 mS/cm OK
0950 P/S MW-9S
1025 SAMPLE TIME MW-9S:
BTEX 3x40 ml VOAs HCl, ICE
- CLEAN UP MOVE TO MW-6S, PAC 7
1100 ARRIVED MW-7
SET UP TO P/S
1115 SET UP PID - 2 CUSCO 170C
1125 P/S MW-7
1225 SAMPLE TIME MW-7:
BTEX 3x40 ml VOAs HCl, ICE
- CLEAN UP MOVE TO MW-6D
1300 P/S MW-6D
1335 SAMPLE TIME MW-6D
BTEX 3x40 ml VOAs HCl, ICE
1340 P/S MW-6S
1450 SAMPLE TIME MW-6S
BTEX 3x40 ml VOAs HCl, ICE

Randolph Ortlund 12/12/12

(126) 2437

0161236 HUNTSMAN GW SAMPLE 12/12/12 WED

1455 CLEAN UP AND MOVE TO MW-15

1530 SET-UP AT MW-15

1600 P/S MW-15

1635 SAMPLE TIME MW-15:

- BTEX 3x40ml HCL, ICE

- CLEAN UP AND SECURE

1700 SAMPLES ON ICE

ALL WELLS/WELL POINTS CLOSED, LOCKED UP

1730 DEPART SITE

BACK TO OFFICE

JENNIFER NOTIFIED

Randolph Ortland 12/12/12

(127) 2437

0161236 HUNTSMAN GW SAMPLE 12/13/12 THU

0700 ARRIVED ERM OFFICE W/ ANNA

- FILL OUT HHS DAILY FORMS

REVIEWED AND SIGNED

- CALIBRATED PID

STD 100ppm ISOBUTYLENE READ 98.9 OK

OBJECT: FINISH GW SAMPLING AND NAPL RECOVERY ACTIVITIES

PERSONNEL: ERM - RANDY ORTLUND

ANNA HESSLE

HUNTSMAN - ED GUNDERSON

EQUIP: T-84, R-TRUCK, CELL, TOOL KIT

GW SAMPLE KIT, WL, OWIP,

PID, P-PUMP

WEATHER: CLR, SUNNY, COLD-WARM, DRY

35-65°F, N 5-15 MPH

HHS: REVIEWED AND SIGNED DAILY

BRIEFING FORMS (2)

0755 DEPART FOR SITE

0825 ARRIVED HUNTSMAN SITE:

- ED ON SITE

- HHS BRIEFING W/ED SIGN DAILY

BRIEFING FORMS (2)

- SET UP TO SAMPLE WELLS

- CALIBRATE GW SAMPLE EQUIP

- NOTIFIED JENNIFER ON SITE

Randolph Ortland 12/13/12

(128) 2437

0161263 HINDSMAN GW SAMPLE 12/13/12 TUE
- CALIBRATION:
- TURBIDITY METER-LAMOTTE
- STD 0.0 NTU READS 0.10 OK
- STD 10.0 NTU READS 9.11 OK
- YSI METER:
- PH STD 7.00 READS 7.15 OK
- 4.01 READS 4.02 OK
- 10.01 READS 10.12 OK
- ORP STD 240 mV READ 280 OK
- COND STD 718 µS/cm 0.729 mS/cm OK
- 1413 µS/cm 1.321 mS/cm OK

0745 SET UP AT MW-14
~~0945~~ 1000 SET OUT FB-3 pick up 15:15
1000 P/S MW-14
1040 SAMPLE TIME MW-14
* ORGANIC GROWTH IN WELL @ 7.2 ft BTOC FORMING A MAT THAT COULD NOT BE PENETRATED BY WL PROBE.
- BTEX 3x40ml VOAS HCL, ICE
SAMPLED WELL UNDER NORMAL LOW FLOW PROTOCOL
1100 SET UP P/S MW-4
1153 SAMPLE TIME MW-4

Randolph Ottland 12/13/12

(129) 2437

0161236 HINDSMAN GW SAMPLE 12/13/12
1215 FB-2 (DISTILLED WATER) WL PRO[BE]
1240 SET-UP P/S MW-5
- PERISTALTIC PUMP
1400 SAMPLE TIME MW-5:
- SAMPLE TIME DUP-1
- BTEX 3x40ml VOAS HCL, ICE
1430 SET P/S MW-08
1515 SAMPLE TIME MW-08
MW-08 MS
MW-08 MSD
BTEX 3x40ml VOAS HCL ICE
1545 SET UP AND BAIL AND P/S MW-10
1630 USING P-PUMP AND 1/4 POLY TUBING "BAILED" PUR[GED]
~1 GAL LIQUIDS (WATER, PR[ODUCT]) LNAPL FROM MW-10 SCR[EEN]
0.04" THK INTO BUCKET UNTIL 0.0" PROD THK IN WELL THEN SET UP FOR P/S OF MW-10
1710 SAMPLE TIME MW-10
~~ALL~~ BTEX 3x40ml HCL, ICE
CLEAN UP SITE
DECON EQUIP

Randolph Ottland 12/13/12

(130) ~~129~~ 2437

0161236 HUNTSMAN GW SAMPLE 12/13/12 THU

- ALL PURGE WATER IN ONE 55 GAL DRUM "FULL" AND MARKED FROM JUNE, JULY, AUG
- ALL PRODUCT AND MW-10 PURGE WATER IN ONE 55 GAL DRUM AND MARKED FROM JULY/DEC EVENTS
- ALL PPE IN ONE 55 GAL DRUM MARKED FOR DEC 12 ONLY

ALL 3 DRUMS LABELED AND DATED FOR CONTENTS

1750 DEPART SITE
WELLS LOCKED
WELL PADS CAPPED
CONTAINMENT LOCK
MAIN GATE LOCKED
BACK TO OFFICE
NOTIFIED JENNIFER

1820 BACK AT OFFICE

Randolph Ostlund 12/13/12

0161236 HUNTSMAN GW SAMPLING 12/13/12 F

0800 ARRIVES EOM OFFICE:

- UNLOAD TRUCK
- CLEAN PACK SHIP RENTAL GW SAMPLE EQUIPMENT
- PACK AND SHIP SAMPLE COOLERS
- UNLOAD TRAILER
- FILL OUT FIELD DAILY ACTIVITY LOGS (HUNTSMAN)
- REVIEW COPY SEND FIELD NOTES TO ~~[illegible]~~ [illegible]

1230 COOLERS PACKED

- EQUIPMENT PACKED
- NOTES COPIED
- COC SENT

READY TO GO FED EX

Randolph Ostlund 12/13/12

LOW FLOW SAMPLING SHEET

Well: RIVER-DOWNSTREAM
Location: DURANGO
Date: 12/11/12
Samplers: RANDOLPH CROTLAND

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	1630	—	—	—	—	—	—	—	—	POLY CUP RIVER SAMPLE

Well Purging Record

mS/cm

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/11/12	1640	Initial	8.61	10.39	3.0576	16.85	8.61 −4	11.76 −4	—	JUST BELOW SURFACE CUP FACING DOWNSTREAM
								11.76		
										DOWNSTREAM OF MW-9
			NO ODORS CLEAR							
			CLEAR SLIGHTLY CLOUDY (SILT)							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/11/12	1630				RIVER-DOWNSTREAM				1 BTEX	1 HCl	1 Cl

RIVER LOW

LOW FLOW SAMPLING SHEET

Well: RIVER-UPSTREAM
Location: HUNTSMAN
Date: 12/11/12
Samplers: RANDALL GROUNDS

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	—	—	—	—	—	—	—	—	—	POLY-CUP RIVER SAMPLER

Well Purging Record

mS/cm

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/11/12		Initial	8.52	11.48	3.044	16.147	-29	11.2	—	JUST BELOW SURFACE CUP FACING DOWNSTREAM
										UPSTREAM OF MW-01
			CLEAR TO SLIGHTLY CLOUDY (SILTY) WATER							
			~~PURGE WATER VERY CLEAR~~							NO APPARENT ODOR

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/11/12	1530					RIVER-UPSTREAM			BTEX	ICE	ICE
12/11/12	1515	FB-1	POLY CUP SAMPLER DISTILLED WATER					FB-1	BTEX	ICE	ICE

LOW FLOW SAMPLING SHEET

Well: MW-3D
Location: HUNTSMAN
Date: 12/11/12
Samplers: RANDOLPH ORSLUND

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	ft bgs Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	12:47	7.09	37.50	4	23-33 bgs	0	0	—	—	0.3 L/m 20/10 @ 20 psi
12/11/12	14:00	7.09	33.90 bgs	TD recorded @ install						DEDICATED PUMP

Well Purging Record

mS/cm

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/11/12	1400	Initial	7.17	19.4	17.46	1.95	-1.5	0.91	7.09	25 psi NEEDED TO PUMP
	1408		7.18	19.08	17.43	1.45	-29.0	0.03	—	175 ml/m = 200 ml/m
	1416		7.20	19.07	17.45	1.28	-46.5	0.21	7.12	
	1421		7.20	19.25	17.49	1.14	-53.9	0.04	7.07	10/5 @ 30 psi
	1427		7.20	19.13	17.44	1.08	-60.4	-0.02	7.07	
	1432		7.20	19.17	17.45	1.05	-63.7	-0.04	—	
	1439		7.20	19.02	17.37	1.00	-66	0.08	—	
			~ 2.5 GALS PURGED							
				CLEAR PURGE	WATER	EARTHY	ODOR			

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/11/12	1445							MW-3D	BTEX	HCl	ICE
12/11/12	1645 - 1650		(DISTILLED WATER)					FB-1	BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

Well: MW-35 **Date:** 12/11/12
Location: HUNTSMAN **Samplers:** RAYMOND ARZUAGA

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	ft bgs Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	1240	6.97	~~14~~	4	2-12	8	0	—	—	0.354/m 15/50 25psi
12/11/12	1530	6.80	12.07 bgs	TD recorded @ install						REDICAGED PUMP

Well Purging Record

mS/cm

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/11/12	1548	Initial	7.75	17.42	9.479	2.03	-34	7.39	6.80	10/20 0.25psi
	1555		7.26	17.65	8.932	1.34	-75	0.38	6.80	200ml/m/N
			~~5.52~~	~~11.48~~	~~3.041~~	~~16.47~~	~~24~~			STOP RU PARAMETERS
	1605		7.19	17.58	8.857	1.35	-66	0.98	6.80	10/5 ~400ml/m
	1610		7.16	18.54	8.538	0.76	-72	0.33	6.80	15/5 ~300ml/m
	1619		7.20	18.22	9.096	0.86	-85	0.34	6.90	20/5 ~75ml/m
	1625		7.19	17.95	9.048	0.91	-86	0.16	6.90	
	1630		7.22	17.70	9.192	0.90	-92	0.08	6.90	
										WL NOT WORKING NORMALLY
			~2.5 GALS	PURGED						DOES NOT STOP BUZZING
										OUT OF WATER
			PURGE WATER VERY CLEAR					FAIRLY CLEAR		

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/11/12	1630							MW-35	BTEX	HCl	

LOW FLOW SAMPLING SHEET

Well: MW-4
Location: HUNTSMAN

Date: 12/13/12
Samplers: Anna Hoessle / Randy Orthmud

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	15:05	5.46	~~18.00~~ OK	4	3-13	0.00	0.00	—	—	0.2 L/min 20/10 @ 20 psi
12/13/12	11:11	5.65	(13.00 bgs)	TD	Recorded @	install				DEDICATED PUMP

Well Purging Record

(mS/cm)

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/13/12	11:20	Initial	6.95	21.08	15.54	5.58	-12	1.58	5.80	20/10 @ 20 psi
	11:25		7.02	22.03	14.72	3.46	-39	0.30	5.80	~ 200 mL/min
	11:30		7.03	22.25	14.68	3.53	-48	0.14	5.83	
	11:35		7.04	22.35	14.71	2.57	-54	0.31	5.82	
	11:40		7.04	22.39	14.73	2.94	-58	0.16	5.82	
	11:45		7.04	22.52	14.76	3.64	-63	0.27	—	
	11:50		7.04	22.52	14.79	2.93	-68	0.02	—	
	11:53		7.04	22.64	14.79	3.01	-70	—	—	
			PURGE WATER	is clear.						
			PURGE WATER	HAS petroleum	odor.					
			PURGE VOLUME	~ 1.5	L					

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/13/12	11:53							MW-4	BTEX	HCl /	ICE
12/13/12	12:15	(DISTILLED WATER)			(WATER LEVEL PROBE)			EB-2	BTEX	HCl /	ICE

LOW FLOW SAMPLING SHEET

Well: MW-5 **Date:** 12/13/12
Location: Huntsman **Samplers:** Anna Hoessle / Randy Oertlund

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	15:11	6.43	15.00	4	1.5-11.5	25.6	0.6	-	-	SAMPLE DEPTH = 10ft BTOC
12/13/12	12:50	6.55	11.50 bgs	TD recorded	(mS/cm)	② install				Peristaltic Pump

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/13/12	13:05	Initial	6.92	21.45	19.50	3.27	-103	16.1	6.80	~175 mL/min
	13:10		6.96	21.90	19.76	3.16	-114	15.2	7.12	Observed dark, fine particles in
	13:15		6.95	22.02	19.81	3.13	-116	12.5	7.23	sample ~100 mL/min
	13:20		6.94	21.95	19.81	3.22	-115	9.86	7.33	
	13:25		6.89	22.03	19.78	3.29	-113	-44*	7.53	*checked calibration of turbidim Standards & ok - Sample is dark
	13:32		6.83	22.17	19.76	4.07	-119	666 AU*	7.66'	black tint
	13:37		6.79	22.33	19.73	3.14	-129	696 AU*	7.70'	' DTW readings are being taken
	13:42		6.80	22.42	19.74	3.32	-151	673 AU*	7.97'	by sight when probe hits surface
	13:47		6.76	22.48	19.73	3.27	-199	777 AU*	7.95'	because probe isn't detecting surface
	13:52		6.74	22.68	19.68	3.20	-256	863 AU*	8.03	
	14:00		6.73	23.18	19.66	3.22	-283	—	—	
										Q-Sox basket (stainless steel) in MW pulled out & is corroded.
				Sample is black in color/tint						
				Apparent petroleum odor. Apparent organic sheen.						
				Purge Volume ~ 2.5-3 gallons						

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/13/12	14:00							MW-5	BTEX	HCl/ice	Sampling depth = 10ft BTOC
12/13/12	14:00	(Sample	time on COC	- 12/12	12 12:	28)		DUP-1	BTEX	HCl/ice	

LOW FLOW SAMPLING SHEET

Well: MW-6S **Date:** 12/12/12
Location: HUNTSMAN **Samplers:** ANNA HOESSLE

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	13:23	7.94	17.00	4	3-13	0.00	0.00	—	—	0.2 L/min 20/10 @ 30
12/12/12	13:55	7.93	13.00 bgs	TD Recorded @			INSTALL			DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) mS/cm	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/12/12	14:15	Initial	7.16	19.42	14.07	3.91	-42	3.89	8.35	0.2 L/min 20/10 @ 30 psi
	14:20		7.15	18.68	12.43	4.26	-72	6.88	8.50	~ 150 mL/min
	14:25		7.13	18.45	12.08	6.01	-87	11.02	8.63	40/20 ~ 100 mL/min
	14:30		7.14	18.23	11.92	5.96	-86	12.4	8.72	
	14:35		7.15	17.82	11.77	4.89	-79	11.9	8.85	
	14:40		7.17	17.55	11.65	6.83	-66	9.64	8.95	
	14:47		7.20	17.38	11.58	7.40	-43	6.03	9.40	
	14:50		7.20	17.28	11.53	7.76	-21	—	—	
			Purge	water	was light	Brownish	yellow in	tint		
			Slight	dirt	odor	(Earthy odor)				
			Purged	~ 1.5 L	of	water				

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/12/12	14:50							MW-6S	BTEX	HCl/ICE	

LOW FLOW SAMPLING SHEET

Well: MW-6D **Date:** 12/12/12
Location: HUMOSAMAR **Samplers:** RANDOLPH ORTIZ-NIEVES

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc) ~~bgs~~	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	1330	7.92	38.0	4	22-32	0	0	—	—	0.1L/min 10/5 @ 20 psi
12/12/12	1300	7.91	32 bgs	4	TD RECORDED @ INSTALL					DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) mS/cm²	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/12/12	1300	Initial	7.29	19.92	20.34	3.44	-4	0.43	7.91	15/5 CYCLE @ ~30 psi
	1309		7.31	19.97	20.58	3.24	-35	-0.17	7.89	200 mL/min
	1314		7.31	20.04	20.61	3.10	-43.1	0.01	7.92	
	1322		7.32	20.03	20.60	2.95	-46	0.14	—	
	1327		7.31	19.87	20.59	2.63	-47	0.03	7.88	
	1332		7.32	19.80	20.58	3.11	-48	0.10	—	
			PURGE WATER IS CLEAR							
			Earthy organic odor							
		2	1.5 gallons PURGED							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/12/12	13:35							B	~~MW-6D~~		
								MW-6D	BTEX	HCl/ice	

Revised:07/10/2007

LOW FLOW SAMPLING SHEET

Well: MW-7 **Date:** 12/12/12
Location: HUNTSMAN **Samplers:** RANDALL ARTLUND

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	~~ft bgs~~ Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	1354	5.88	15.50	4	2-12	0	0	—	—	
12/12/12	1115	6.93	~~12.66 bgs~~	TD	Recorded @	install				DEDICATED PUMP

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) mS/cm	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/12/12	1125	Initial	7.27	20.70	9.242	4.06	-23	2.45	5.93	0.5 L/m @ 30 psi 20/10
	1130		7.19	21.91	8.051	1.83	-61	0.73	6.18	~ 200 ml/min
	1139		7.22	21.51	7.694	1.67	-74	0.75	6.55	40/20 @ 100 ml/min
	1145		7.18	20.75	8.214	2.18	-82	0.63	6.51	
	1153		7.17	20.61	8.461	1.74	-86	0.55	6.49	
	1203		7.17	20.67	8.661	3.01	-89	0.73	6.46	
	1212		7.17	20.90	8.736	3.36	-92	0.77	6.45	
	1220		7.18	20.77	8.814	3.95	-96	0.56	6.57	
	1225									
			PURGED ~ 1.75 GALS							
			VERY CLEAR SLIGHT YELLOW TINT SLIGHT PETROL ODOR							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/12/12	1225							MW-7	BTEX	HCl	
12/12/12	1115 - 1900		(DISTILLED WATER)					FB-2	BTEX	HCl	

LOW FLOW SAMPLING SHEET

Well: MW-8 **Date:** 12/13/12

Location: Huntsman **Samplers:** Anna Hoessle / Randy Ortlund

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	15:17	6.17	14.65	4	1.5-11.5	1.2	0.0	-	-	Sample depth @ 9ft BToC
12/13/12	14:40	6.02	11.54 bgs	TD RECORDED @ install						

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/13/12	14:45	Initial	7.34	22.14	8.442	6.17	-223	13.5	6.58	≈200 mL/min
	14:50		7.35	22.52	7.566	8.21	-225	11.6	6.73	≈100 mL/min
	14:55		7.35	21.81	7.475	6.86	-218	10.62	6.83	
	~~14:55~~ 15:00		7.35	21.36	6.911	9.19	-217	9.90	6.91	
	15:05		7.34	21.05	7.407	8.60	-216	9.21	7.00	
	15:10		7.33	20.94	7.394	9.43	-215	9.53	7.08	
	15:15		7.33	20.94	7.388	10.06	-214	—	—	
				Purge water has yellow/brownish tint						
				Purge water has burnt oily & metallic odor						
				Purge Vol ≈ 1.5 gallons						

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/13/12	15:15							MW-8	BTEX	HCl / ice	Sample depth = 9ft BToC
12/13/12	15:15							MW-8 MS	BTEX	HCl / ice	
12/13/12	15:15							MW-8 MSD	BTEX	HCl / ice	

LOW FLOW SAMPLING SHEET

Well: MW-9S **Date:** 12/12/12

Location: HUNTSMAN **Samplers:** RANDOLPH CASTRO

Well Information

15.50 - TD Recorded 12/15/11

Date	Time	DTW (ft-toc)	Well TD (ft-toc) / ft bgs	Well Dia (in)	ft bgs Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	1339	7.52	~~12.5~~	4	7.5-12.5	0	0	-	-	0.45L/m 10/5 @ 20 psi
12/12/12	0955	7.60	12.50 bgs	TD RECORDED @ INSTALL						DEDICATED PUMP

Well Purging Record

mS/cm

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/12/12	0955	Initial	7.17	20.60	15.00	2.08	-84	2.61	7.60	10/5 @ 30 psi
	1000		7.18	21.39	15.06	1.53	-106	1.22	-	400 ml/min
	1006		7.16	21.53	15.09	1.31	-113	0.69	7.65	
	1012		7.17	21.50	15.09	1.42	-120	1.2	-	
	1017		7.17	21.58	15.08	1.06	-122	0.35	7.65	
	1023		7.18	21.41	15.12	0.94	-124	0.54	-	
				~3.5 GALS PURGED						
			PURGED WATER CLEAR SLIGHT ORGANIC (DIRT) ODOR							

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/12/12	1025							MW-9S	BTEX	HCl	ICE

LOW FLOW SAMPLING SHEET

Well: MW-10 **Date:** 12/13/12

Location: Huntsman **Samplers:** Anna Hoessle / Randy Ortlund

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/12/12	10:34	9.99	~~9.95~~	4	6-16	8.0	1.6	0.04	—	SAMPLE depth @ 14' BTOC
12/13/12	16:25	10.30	19.89 (16.00ftbgs)	5"	TD recorded @ install					Peristaltic Pump

Well Purging Record

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm) (mS/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/13/12	16:32	Initial	7.53	19.22	8.649	7.69	-73	5.18	10.46	200 mL/min
	16:37		7.27	21.67	8.875	7.02	-116	1.69	10.45	~~Well bailed~~
	16:42		7.26	21.96	8.951	7.22	-132	1.67	10.50	250 mL/min
	16:47		7.27	22.22	8.976	7.06	-147	1.41	10.54	
	16:52		7.28	22.31	8.910	7.10	-195	0.57	10.60	
	16:57		7.28	22.05	8.882	7.25	-255	0.72	10.62	
	17:02		7.29	22.05	8.824	7.07	-283	0.49	—	
	17:07		7.28	22.06	8.817	7.32	-283	0.58	—	
	17:10		—	—	—	—	—	—	—	
		PURGE WATER IS CLEAR W/ Straw Yellow tint.								Well bailed w/ p-pump. Recovered 1 gallon water w/ LNAPL & sheen on top. Re-gauged & 0.0 thk. of from 0-10 interface probe
		PURGE WATER HAS OIL ODOR / Slight sheen								
		PURGE WATER Volume ≈ 2 gallon								

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/13/12	17:10							MW-10	BTEX	HCl/ice	

LOW FLOW SAMPLING SHEET

Well: MW-14 **Date:** 12/13/12

Location: HUNTSMAN **Samplers:** Anna Hoarle / Randy Ortlund

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	14:58	5.62	26.10	4	2.2-17.8	0.00	0.00	—	—	10/5 @ 20 psi 0.35 L/min
12/13/12	~~5.69~~	5.69	17.8 bgs	TD @ install						DEDICATED PUMP

Well Purging Record 09:49

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	Comments
12/13/12	09:59	Initial	6.68	~~18.~~ 17.59	16.97	6.02	77	1.23	5.96	10/5 @ 20 psi
	10:04		6.97	19.86	19.74	3.64	-21	0.44	6.91	organics (plant) growth observed on probe
	10:09		7.01	19.98	20.23	3.38	-47	0.11	6.94	40/20 @ 20 psi ~ 100 mL/min
	10:14		7.02	18.95	20.19	3.63	-53	0.14	7.10	- Roots observed on probe
	10:19		7.02	19.05	20.19	3.60	-56	0.26	7.25	Probe lowered through what
	10:24		7.02	19.02	20.20	3.33	-59	0.16	7.20	seems to be a growth mat
	10:29		7.02	19.06	20.18	3.34	-61	0.02	7.13	can't lower probe further
	10:34		7.01	18.97	20.17	3.38	-63	-0.09	7.05	through this vegetative
	10:40		7.00	19.25	20.08	3.37	-64	—	—	mat.
			Purge	WATER IS CLEAR.						
			PURGE	WATER HAS EARTHY			odor (soil odor)	& subtle	petroleum odor.	
			Purge	Volume ~ 1.5 gal						

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Presery	Comments
12/13/12	10:40							MW-14	BTEX	HCl/ice	
12/13/12	10:00 -	15:15						FB-3	BTEX	HCl/ice	

LOW FLOW SAMPLING SHEET

Well: MW-15 **Date:** 12/12/12

Location: Huntsman **Samplers:** ANNA HOSSLE

Well Information

Date	Time	DTW (ft-toc)	Well TD (ft-toc)	Well Dia (in)	(ft bgs) Screened Interval	PID Well (ppmv)	PID BZ Zone (ppmv)	LNAPL (ft)	DNAPL (ft)	Comments
12/11/12	14:39	15.82	35.20	4	10.7-26.7	0.00	0.00	—	—	~~10/5~~ 10/5 @ 20 PSI 0.35 L/m
12/12/12	15:46	15.75	26.7 bgs	TD recorded @ install						DEDICATED PUMP

Well Purging Record

(mS/cm)

Date	Time	Cum Vol Purged (L)	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	DTW (ft-toc)	50 Comments
12/12/12	16:08	Initial	7.11	17.06	10.77	8.37	-30	0.53	15.82	10/5 @ ~~20~~ PSI ~~0.35 L/min~~
	16:13		7.11	17.47	10.81	4.97	-52	-0.24	15.82	2200 mL/min
	16:18		7.11	17.39	10.80	6.92	-59	0.10	15.80	
	16:23		7.12	17.45	10.74	8.52	-62	0.21	—	
	16:28		7.14	17.03	10.56	6.20	-62	0.01	—	
	16:35		7.16	16.66	10.29	8.81	-58	—	—	
			Purge	water	is CLEAR ~~with debris~~					
			PURGE	water	has SUBTLE	petroleum odor.				
			Purge	Vol ≈	1 gallon					

Sampling Record

Date	Time	pH (std units)	Temp (c)	SC (umhos/cm)	Dissolved Oxygen (mg/L)	Redox Potential (mV)	Turbidity (NTU)	Sample ID	Analysis	Preserv	Comments
12/12/12	16:35							MW-15	BTEX	HCl/ice	

Huntsman Wells Gauging Information (Monitor Wells)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-1	12/11	13:00	0.00		6.56		
MW-2							P&A 6/99
MW-3S	12/11	12:40	0.00		6.97		
MW-3D	12/11	12:47	0.00		7.09		
(2) MW-4	12/11	15:05	0.00		5.66		
(3) MW-5	12/11	15:11	25.6 ODOR B2: 1.7/0.6		6.43		FINE BLACK PARTICLES IN WATER COLUMN PREVIOUS O-SOX WELL - ODOR - HCO
MW-6S	12/11	13:33	0.00		7.94		
MW-6D	12/11	13:30	0.00		7.92		
MW-7	12/11	13:54	0.00		5.88		
(4) MW-8	12/11	15:17	1.2 odor		6.17		~~Black FINE PARTICLES IN WATER COLUMN PREVIOUS O-SOX WELL~~ HCO ODOR
MW-9S	12/11	13:39	0.00		7.52		
MW-9D							P&A 7/05
* MW-10	GAUGE W/ OWI P W/ WELL AOI#5						Sheen recovery well w/pump
MW-11	12/12	11:07	0.00		8.42		
MW-12	12/11	13:12	0.00		6.02		

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Collector: ANNA HOESSLE

Revised: 12/19/2012

Huntsman Wells Gauging Information (Monitor Wells)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	Comments
MW-13							P&A 6/99
MW-14	12/11	14:58	0.00		5.62		WL PROBE CANNOT PENETRATE ORGANIC MAT AT ~ 7 ft
MW-15	12/11	14:39	0.00		15.81		
MW-16	12/11	13:49	0.00		12.07		
MW-17	12/11	13:59	0.00		8.93		

(1) Product Thickness = (depth to water) - (depth to product)
Notes: Water Equals Non Product Liquids; S-well sampled; N/S-well not sampled

Data Collector: ANNA HOESSLE

Revised: 12/19/2011

Huntsman Wells Gauging Information (Well Points)

Well ID	Date	Time	PID	Depth to Product (ft)	Depth to Water (ft)	(1) Product Thickness (ft)	(2) Well Bailed Yes/No	Comments
WP-1	12/12/12	08:55	117.0 ODOR BZ: 6.3	—	10.79	—		odor HCO
WP-2	12/12/12	09:42	17.3 BZ: 0.6	SHEEN 9:05	9.06	0.01		
WP-3	12/12/12	09:47	1.2	—	— DRY	—		
WP-7	12/12/12	08:45	1.8	—	11.93	—		
WP-14	12/12/12	10:22	3.9	—	5.90	—		ODOR HCO/tar on probe TAR at bottom of well
duct tape WP-25	12/12/12	08:52	75 BZ: 4.5	—	8.91	—		
WP-26S	12/12/12	10:10	2.6	—	9.96	—		
WP-26D	12/12/12	08:38	36.0 odor BZ: 0.7	—	10.67	—		odor-HC
WP-27S	12/12/12	09:03	65.3 ODOR BZ: 2.5	—	14.51	—		ODOR -HC
WP-27D	12/12/12	09:07	8.6 BZ: 1.6	—	14.50	—		
WP-30	12/12/12	09:51	1.4	—	11.37	—		ODOR-HC
couldn't open WP-31	12/12/12	—	—	—	—	—	—	
WP-32	12/12/12	09:15	6.5 BZ: 0.8	—	— DRY	SHEEN		DRY
WP-33	12/12/12	10:01	49.3 ODOR BZ: 1.3	SHEEN	10.18	—		ODOR -HC SOLID BEEP WHEN
X Call Jennifer w/ result MW-10	12/12/12	10:34	8.0 ODOR BZ: 1.6	9.95	9.99	0.04		ODOR-HC Recovery well w/pump removing probe

(1) Product Thickness = (depth to water) - (depth to product)
(2) See Well Bailing field form
Note: Water Equals Non Product Liquids

Data Collector: Anna Hoessle

Revised: 12/10/2008

ALS Environmental

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Salt Lake City, UT +1 801 266 7700
South Charleston, WV +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

COC ID: 77240

ALS Project Manager:	ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order:		Project Name:	Huntsland Brickyard	A	BTEX (8021)
Work Order:		Project Number:	0161236.03	B	
Company Name:	ERM Southwest, Inc.	Bill To Company:	ERM Southwest, Inc.	C	
Send Report To:	Jennifer Warfield	Invoice Attn:	Jennifer Warfield	D	
Address:	206 E. 9th Street Suite 1700	Address:	206 E. 9th Street Suite 1700	E	
				F	
City/State/Zip:	Austin, TX 78701	City/State/Zip:	Austin, TX 78701	G	
Phone:	(512) 459-4700	Phone:	(512) 459-4700	H	
Fax:	(512) 459-4711	Fax:	(512) 459-4711	I	
e-Mail Address:		e-Mail Address:		J	

No.	Sample Description	Date	Time	Matrix	Pres.	Bottle	A	B	C	D	E	F	G	H	I	J	Hold
1	RIVER - UPSTREAM	12/11/12	15:30	WATER	1,8	3	X										
2	RIVER - DOWNSTREAM	12/11/12	16:30	WATER	1,8	3	X										
3	MW-3D	12/11/12	14:45	Water	1,8	3	X										
4	MW-3S	12/11/12	16:30	Water	1,8	3	X										
5	MW-4	12/13/12	11:53	Water	1,8	3	X										
6	MW-5	12/13/12	14:00	Water	1,8	3	X										
7	MW-6D	12/12/12	13:35	Water	1,8	3	X										
8	MW-6S	12/12/12	14:50	Water	1,8	3	X										
9	MW-7	12/12/12	12:25	Water	1,8	3	X										
10	MW-8	12/13/12	15:15	Water	1,8	3	X										

Sampler(s) Please Print & Sign: ANNA K HOESSLE

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:	Date:	Time:	Received by:	Notes: 10 Day TAT.
	12/14/12	12:60		
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☑ TRRP Checklist
- ☐ TRRP Level IV

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

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

COC ID: 77241

ALS Project Manager:	ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order:		Project Name:	Huntsland Brickyard	A	BTEX (8021)
Work Order:		Project Number:	0161236.03	B	
Company Name:	ERM Southwest, Inc.	Bill To Company:	ERM Southwest, Inc.	C	
Send Report To:	Jennifer Warfield	Invoice Attn:	Jennifer Warfield	D	
Address:	206 E. 9th Street Suite 1700	Address:	206 E. 9th Street Suite 1700	E	
City/State/Zip:	Austin, TX 78701	City/State/Zip:	Austin, TX 78701	F	
Phone:	(512) 459-4700	Phone:	(512) 459-4700	G	
Fax:	(512) 459-4711	Fax:	(512) 459-4711	H	
e-Mail Address:		e-Mail Address:		I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-9S	12/12/12	10:25	WATER	1,8	3	X										
2	MW-10	12/13/12	17:10	WATER	1,8	3	X										
3	MW-14	12/13/12	10:40	WATER	1,8	3	X										
4	MW-15	12/12/12	16:35	WATER	1,8	3	X										
5	EB-1	12/11/12	15:15	WATER	1,8	3	X										
6	FB-1	12/11/12	~~16:50~~ 13:45 AM	WATER	1,8	3	X										
7	EB-2	12/13/12	12:15	WATER	1,8	3	X										
8	DUP-1	12/12/12	12:28	WATER	1,8	3	X										
9	FB-2	12/12/12	17:15	WATER	1,8	3	X										
10	FB-3	12/13/12	10:00	WATER	1,8	3	X										

Sampler(s) Please Print & Sign: Anna L. Hoese

Shipment Method: FEDEX

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 1 WK Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Day TAT.
	12/14/12	12:00		
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 II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☑ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 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.

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
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 +1 304 356 3168
York, PA +1 717 505 5280

Chain of Custody Form

COC ID: 77242

ALS Project Manager:

ALS Work Order #:

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsland Brickyard	A	BTEX (8021)
Work Order		Project Number	0161236.03	B	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
Send Report To	Jennifer Warfield	Invoice Attn	Jennifer Warfield	D	
Address	206 E. 9th Street Suite 1700	Address	206 E. 9th Street Suite 1700	E	
City/State/Zip	Austin, TX 78701	City/State/Zip	Austin, TX 78701	F	
Phone	(512) 459-4700	Phone	(512) 459-4700	G	
Fax	(512) 459-4711	Fax	(512) 459-4711	H	
e-Mail Address		e-Mail Address		I	
				J	
				K	
				L	
				M	
				N	
				O	
				P	
				Q	
				R	
				S	
				T	
				U	

No.	Sample Description	Date	Time	Matrix	Pres.	Bottles	A	B	C	D	E	F	G	H	I	J	K	Hold
1	MW-8 MS	12/13/12	15:15	Water	1,8	3	X											
2	MW-8 MSD	12/13/12	15:15	Water	1,8	3	X											
3	TBLK-1	12/14/12		Water	1,8	2	X											
4	TBLK-2	12/14/12		Water	1,8	2	X											
5																		
6																		
7																		
8																		
9																		
10																		

Sampler(s) Please Print & Sign: Anna F. Hesse - AHesse

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:	Date:	Time:	Received by:	Notes:
Anna F. Hesse - AHesse	12/14/12	12:00		10 Day TAT.
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp

QC Package: (Check One Box Below)

- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☑ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 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.

Laboratory Data Reports

Appendix B

March 2013
Huntsman
Project No. 0161236

Environmental Resources Management
206 East 9th Street, Suite 1700
Austin, Texas 78701
(512) 459-4700

ALS Environmental

17-Jul-2012

Jennifer Warfield
ERM Southwest, Inc.
206 E. 9th Street
Suite 1700
Austin, TX 78701

Tel: (512) 374-2224
Fax: (512) 459-4711

Re: Huntsman

Work Order: **1206995**

Dear Jennifer,

ALS Environmental received 18 samples on 23-Jun-2012 09:25 AM for the analyses 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.

The total number of pages in this report is 58.

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

Sincerely,

Patricia L. Lynch

Electronically approved by: Yvan K. Ty

Patricia L. Lynch
Project Manager

Certificate No: TX: T104704231-12-10

ALS Environmental **Date:** *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Work Order: 1206995

TRRP Laboratory Data Package Cover Page

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	ERM Southwest, Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Huntsman	
Work Order:	1206995	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Patricia L. Lynch

Patricia L. Lynch
Project Manager

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 07/17/2012					
Project Name: Huntsman			Laboratory Job Number: 1206995					
Reviewer Name: Pat Lynch			Prep Batch Number(s): 62113, 62197, 62257, 62301, R13039, R13041					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?		X			1	
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?			X			
		Were % moisture (or solids) reported for all soil and sediment samples?			X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X					
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X					
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?	X					
		Were analytical duplicates analyzed at the appropriate frequency?	X					
		Were RPDs or relative standard deviations within the laboratory QC limits?	X					
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				2	
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 07/17/2012					
Project Name: Huntsman			Laboratory Job Number: 1206995					
Reviewer Name: Pat Lynch			Prep Batch Number(s): 62113, 62197, 62257, 62301, R13039, R13041					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?	X					
		Were percent RSDs or correlation coefficient criteria met?	X					
		Was the number of standards recommended in the method used for all analytes?	X					
		Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		Are ICAL data available for all instruments used?	X					
		Has the initial calibration curve been verified using an appropriate second source standard?	X					
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**						
		Was the CCV analyzed at the method-required frequency?	X					
		Were percent differences for each analyte within the method-required QC limits?	X					
		Was the ICAL curve verified for each analyte?	X					
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X					
S3	O	**Mass spectral tuning:**						
		Was the appropriate compound for the method used for tuning?	X					
		Were ion abundance data within the method-required QC limits?	X					
S4	O	**Internal standards (IS):**						
		Were IS area counts and retention times within the method-required QC limits?	X					
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X					
		Were data associated with manual integrations flagged on the raw data?	X					
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?			X			
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X			
S8	I	**Interference Check Sample (ICS) results:**						
		Were percent recoveries within method QC limits?	X					
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X					
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?	X					
		Is the MDL either adjusted or supported by the analysis of DCSs?	X					
S11	OI	**Proficiency test reports:**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X					
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X					
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?	X					
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X					
		Is documentation of the analyst's competency up-to-date and on file?	X					
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)						
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X					
S16	OI	**Laboratory standard operating procedures (SOPs):**						
		Are laboratory SOPs current and on file for each method performed?	X					

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;

Laboratory Review Checklist: Reportable Data	
Laboratory Name: ALS Laboratory Group	LRC Date: 07/17/2012
Project Name: Huntsman	Laboratory Job Number: 1206995
Reviewer Name: Pat Lynch	Prep Batch Number(s): 62113, 62197, 62257, 62301, R13039, R13041

ER#[5]	Description
1	Samples for PAHs that were collected on 6/19/12 and 6/20/12 were extracted outside the holding times. The preprinted COC specified pesticides instead of PAHs, but pesticides were not required. By the time this was resolved, some of the holding times had already expired. ALS immediately extracted the sample collected on 6/21/2012 to ensure that the holding times were met.
2	Batch 62257, PAHs: For sample MW-3D, there was only one unpreserved liter amber bottle for extractables , and this sample was extracted for pesticides. Therefore, ALS used one of the 40 ml vials provided for BTEX for PAH analyses using Method 3511. This sample was preserved with hydrochloric acid. We matched the matrix by adding the same amount and concentration of acid to the sample, method blank, LCS, MS/MSD and calibration standards. Since the LCS/LCSD recoveries were acceptable, we concluded that the acid did not interfere.

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

ALS Environmental

Date: 17-Jul-12

Client: ERM Southwest, Inc.
Project: Huntsman
Work Order: **1206995**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1206995-01	MW-3S	Water		6/19/2012 16:15	6/23/2012 09:25	☐
1206995-02	FB-1	Water		6/19/2012 17:35	6/23/2012 09:25	☐
1206995-03	MW-3D	Water		6/19/2012 17:20	6/23/2012 09:25	☐
1206995-04	River - UP Stream	Water		6/19/2012 16:55	6/23/2012 09:25	☐
1206995-05	River - Down Stream	Water		6/19/2012 17:15	6/23/2012 09:25	☐
1206995-06	EB-1	Water		6/19/2012 17:05	6/23/2012 09:25	☐
1206995-07	MW-7	Water		6/20/2012 09:30	6/23/2012 09:25	☐
1206995-08	MW-4	Water		6/20/2012 11:00	6/23/2012 09:25	☐
1206995-09	FB-2	Water		6/20/2012 16:15	6/23/2012 09:25	☐
1206995-10	EB-2	Water		6/20/2012 11:15	6/23/2012 09:25	☐
1206995-11	MW-14	Water		6/20/2012 14:00	6/23/2012 09:25	☐
1206995-12	MW-9S	Water		6/20/2012 15:40	6/23/2012 09:25	☐
1206995-13	FB-3	Water		6/21/2012 13:35	6/23/2012 09:25	☐
1206995-14	MW-15	Water		6/21/2012 08:40	6/23/2012 09:25	☐
1206995-15	MW-6D	Water		6/21/2012 10:15	6/23/2012 09:25	☐
1206995-16	MW-6S	Water		6/21/2012 11:20	6/23/2012 09:25	☐
1206995-17	Dup-1	Water		6/21/2012 08:00	6/23/2012 09:25	☐
1206995-18	Trip Blank - 060712-88	Water		6/21/2012	6/23/2012 09:25	☐

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-3S
Collection Date: 6/19/2012 04:15 PM

Work Order: 1206995
Lab ID: 1206995-01
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 14:42
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 14:42
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 14:42
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 14:42
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	6/30/2012 14:42
Surr: Trifluorotoluene	*93.3*			*75-130*	*%REC*	1	6/30/2012 14:42
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.00070	0.00500	mg/L	1	7/5/2012 14:31
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Acenaphthylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Benz(a)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Benzo(a)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Benzo(b)fluoranthene	U	H	0.000060	0.00020	mg/L	1	6/28/2012 22:46
Benzo(g,h,i)perylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Benzo(k)fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Chrysene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Dibenz(a,h)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Fluorene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Indeno(1,2,3-cd)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Naphthalene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Phenanthrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 22:46
Surr: 2-Fluorobiphenyl	*60.7*			*40-125*	*%REC*	1	6/28/2012 22:46
Surr: 4-Terphenyl-d14	*65.3*			*40-135*	*%REC*	1	6/28/2012 22:46
Surr: Nitrobenzene-d5	*52.5*			*41-120*	*%REC*	1	6/28/2012 22:46

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: FB-1
Collection Date: 6/19/2012 05:35 PM

Work Order: 1206995
Lab ID: 1206995-02
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:13
Toluene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:13
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:13
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/29/2012 22:13
Surr: 4-Bromofluorobenzene	*96.0*			*75-129*	*%REC*	1	6/29/2012 22:13
Surr: Trifluorotoluene	*92.4*			*75-130*	*%REC*	1	6/29/2012 22:13

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-3D
Collection Date: 6/19/2012 05:20 PM

Work Order: 1206995
Lab ID: 1206995-03
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:31
Toluene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:31
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:31
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/29/2012 22:31
Surr: 4-Bromofluorobenzene	*99.5*			*75-129*	*%REC*	1	6/29/2012 22:31
Surr: Trifluorotoluene	*93.4*			*75-130*	*%REC*	1	6/29/2012 22:31
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.00070	0.00500	mg/L	1	7/5/2012 14:35
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3511 / 6/29/12		Analyst: **LG**
Acenaphthene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Acenaphthylene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Anthracene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Benz(a)anthracene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Benzo(a)pyrene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Benzo(b)fluoranthene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Benzo(g,h,i)perylene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Benzo(k)fluoranthene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Chrysene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Dibenz(a,h)anthracene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Fluoranthene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Fluorene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Indeno(1,2,3-cd)pyrene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Naphthalene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Phenanthrene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Pyrene	U	H	0.000019	0.0000951	mg/L	1	6/29/2012 19:14
Surr: 2-Fluorobiphenyl	*101*			*40-125*	*%REC*	1	6/29/2012 19:14
Surr: 4-Terphenyl-d14	*105*			*40-135*	*%REC*	1	6/29/2012 19:14
Surr: Nitrobenzene-d5	*113*			*41-120*	*%REC*	1	6/29/2012 19:14

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: River - UP Stream
Collection Date: 6/19/2012 04:55 PM

Work Order: 1206995
Lab ID: 1206995-04
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:49
Toluene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:49
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/29/2012 22:49
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/29/2012 22:49
Surr: 4-Bromofluorobenzene	*97.7*			*75-129*	*%REC*	1	6/29/2012 22:49
Surr: Trifluorotoluene	*92.6*			*75-130*	*%REC*	1	6/29/2012 22:49
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	**0.00674**		**0.00070**	**0.00500**	**mg/L**	1	7/5/2012 14:39
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Acenaphthylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Benz(a)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Benzo(a)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Benzo(b)fluoranthene	U	H	0.000060	0.00020	mg/L	1	6/28/2012 23:05
Benzo(g,h,i)perylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Benzo(k)fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Chrysene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Dibenz(a,h)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Fluorene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Indeno(1,2,3-cd)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Naphthalene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Phenanthrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:05
Surr: 2-Fluorobiphenyl	*58.9*			*40-125*	*%REC*	1	6/28/2012 23:05
Surr: 4-Terphenyl-d14	*86.4*			*40-135*	*%REC*	1	6/28/2012 23:05
Surr: Nitrobenzene-d5	*54.6*			*41-120*	*%REC*	1	6/28/2012 23:05

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: River - Down Stream
Collection Date: 6/19/2012 05:15 PM

Work Order: 1206995
Lab ID: 1206995-05
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/29/2012 23:07
Toluene	U		0.00020	0.0010	mg/L	1	6/29/2012 23:07
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/29/2012 23:07
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/29/2012 23:07
Surr: 4-Bromofluorobenzene	*95.9*			*75-129*	*%REC*	1	6/29/2012 23:07
Surr: Trifluorotoluene	*91.7*			*75-130*	*%REC*	1	6/29/2012 23:07
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	**0.00536**		**0.00070**	**0.00500**	**mg/L**	1	7/5/2012 16:25
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Acenaphthylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Benz(a)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Benzo(a)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Benzo(b)fluoranthene	U	H	0.000060	0.00020	mg/L	1	6/28/2012 23:25
Benzo(g,h,i)perylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Benzo(k)fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Chrysene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Dibenz(a,h)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Fluorene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Indeno(1,2,3-cd)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Naphthalene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Phenanthrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:25
Surr: 2-Fluorobiphenyl	*59.5*			*40-125*	*%REC*	1	6/28/2012 23:25
Surr: 4-Terphenyl-d14	*68.7*			*40-135*	*%REC*	1	6/28/2012 23:25
Surr: Nitrobenzene-d5	*54.2*			*41-120*	*%REC*	1	6/28/2012 23:25

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: EB-1
Collection Date: 6/19/2012 05:05 PM

Work Order: 1206995
Lab ID: 1206995-06
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/29/2012 23:25
Toluene	U		0.00020	0.0010	mg/L	1	6/29/2012 23:25
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/29/2012 23:25
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/29/2012 23:25
Surr: 4-Bromofluorobenzene	*99.1*			*75-129*	*%REC*	1	6/29/2012 23:25
Surr: Trifluorotoluene	*95.3*			*75-130*	*%REC*	1	6/29/2012 23:25

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-7
Collection Date: 6/20/2012 09:30 AM

Work Order: 1206995
Lab ID: 1206995-07
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:00
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:00
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:00
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 15:00
Surr: 4-Bromofluorobenzene	*98.8*			*75-129*	*%REC*	1	6/30/2012 15:00
Surr: Trifluorotoluene	*92.4*			*75-130*	*%REC*	1	6/30/2012 15:00
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.0014	0.0100	mg/L	2	7/5/2012 14:52
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Acenaphthylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Benz(a)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Benzo(a)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Benzo(b)fluoranthene	U	H	0.000060	0.00020	mg/L	1	6/28/2012 23:44
Benzo(g,h,i)perylene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Benzo(k)fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Chrysene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Dibenz(a,h)anthracene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Fluorene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Indeno(1,2,3-cd)pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Naphthalene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Phenanthrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Pyrene	U	H	0.000050	0.00020	mg/L	1	6/28/2012 23:44
Surr: 2-Fluorobiphenyl	*73.0*			*40-125*	*%REC*	1	6/28/2012 23:44
Surr: 4-Terphenyl-d14	*85.6*			*40-135*	*%REC*	1	6/28/2012 23:44
Surr: Nitrobenzene-d5	*65.0*			*41-120*	*%REC*	1	6/28/2012 23:44

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-4
Collection Date: 6/20/2012 11:00 AM

Work Order: 1206995
Lab ID: 1206995-08
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	**0.0029**		**0.00020**	**0.0010**	**mg/L**	1	6/30/2012 00:36
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 00:36
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 00:36
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 00:36
Surr: 4-Bromofluorobenzene	*99.6*			*75-129*	*%REC*	1	6/30/2012 00:36
Surr: Trifluorotoluene	*94.2*			*75-130*	*%REC*	1	6/30/2012 00:36
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.0014	0.0100	mg/L	2	7/5/2012 15:05
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Acenaphthylene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Benz(a)anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Benzo(a)pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Benzo(b)fluoranthene	U	H	0.000060	0.00020	mg/L	1	6/29/2012 00:03
Benzo(g,h,i)perylene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Benzo(k)fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Chrysene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Dibenz(a,h)anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Fluorene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Indeno(1,2,3-cd)pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Naphthalene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Phenanthrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:03
Surr: 2-Fluorobiphenyl	*57.4*			*40-125*	*%REC*	1	6/29/2012 00:03
Surr: 4-Terphenyl-d14	*70.3*			*40-135*	*%REC*	1	6/29/2012 00:03
Surr: Nitrobenzene-d5	*53.5*			*41-120*	*%REC*	1	6/29/2012 00:03

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: FB-2
Collection Date: 6/20/2012 04:15 PM

Work Order: 1206995
Lab ID: 1206995-09
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 00:53
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 00:53
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 00:53
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 00:53
Surr: 4-Bromofluorobenzene	*99.7*			*75-129*	*%REC*	1	6/30/2012 00:53
Surr: Trifluorotoluene	*97.6*			*75-130*	*%REC*	1	6/30/2012 00:53

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: EB-2
Collection Date: 6/20/2012 11:15 AM

Work Order: 1206995
Lab ID: 1206995-10
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 01:11
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 01:11
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 01:11
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 01:11
Surr: 4-Bromofluorobenzene	*97.0*			*75-129*	*%REC*	1	6/30/2012 01:11
Surr: Trifluorotoluene	*102*			*75-130*	*%REC*	1	6/30/2012 01:11

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-14
Collection Date: 6/20/2012 02:00 PM

Work Order: 1206995
Lab ID: 1206995-11
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 01:29
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 01:29
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 01:29
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 01:29
Surr: 4-Bromofluorobenzene	*97.2*			*75-129*	*%REC*	1	6/30/2012 01:29
Surr: Trifluorotoluene	*92.9*			*75-130*	*%REC*	1	6/30/2012 01:29
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.0014	0.0100	mg/L	2	7/5/2012 15:09
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Acenaphthylene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Benz(a)anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Benzo(a)pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Benzo(b)fluoranthene	U	H	0.000060	0.00020	mg/L	1	6/29/2012 18:45
Benzo(g,h,i)perylene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Benzo(k)fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Chrysene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Dibenz(a,h)anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Fluorene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Indeno(1,2,3-cd)pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Naphthalene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Phenanthrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 18:45
Surr: 2-Fluorobiphenyl	*69.3*			*40-125*	*%REC*	1	6/29/2012 18:45
Surr: 4-Terphenyl-d14	*72.2*			*40-135*	*%REC*	1	6/29/2012 18:45
Surr: Nitrobenzene-d5	*59.5*			*41-120*	*%REC*	1	6/29/2012 18:45

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-9S
Collection Date: 6/20/2012 03:40 PM

Work Order: 1206995
Lab ID: 1206995-12
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:18
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:18
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:18
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 15:18
Surr: 4-Bromofluorobenzene	*95.7*			*75-129*	*%REC*	1	6/30/2012 15:18
Surr: Trifluorotoluene	*91.3*			*75-130*	*%REC*	1	6/30/2012 15:18
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.0014	0.0100	mg/L	2	7/5/2012 15:14
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Acenaphthylene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Benz(a)anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Benzo(a)pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Benzo(b)fluoranthene	U	H	0.000060	0.00020	mg/L	1	6/29/2012 00:42
Benzo(g,h,i)perylene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Benzo(k)fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Chrysene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Dibenz(a,h)anthracene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Fluoranthene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Fluorene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Indeno(1,2,3-cd)pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Naphthalene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Phenanthrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Pyrene	U	H	0.000050	0.00020	mg/L	1	6/29/2012 00:42
Surr: 2-Fluorobiphenyl	*66.1*			*40-125*	*%REC*	1	6/29/2012 00:42
Surr: 4-Terphenyl-d14	*81.0*			*40-135*	*%REC*	1	6/29/2012 00:42
Surr: Nitrobenzene-d5	*61.1*			*41-120*	*%REC*	1	6/29/2012 00:42

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: FB-3
Collection Date: 6/21/2012 01:35 PM

Work Order: 1206995
Lab ID: 1206995-13
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 02:05
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 02:05
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 02:05
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 02:05
Surr: 4-Bromofluorobenzene	*99.9*			*75-129*	*%REC*	1	6/30/2012 02:05
Surr: Trifluorotoluene	*95.7*			*75-130*	*%REC*	1	6/30/2012 02:05

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-15
Collection Date: 6/21/2012 08:40 AM

Work Order: 1206995
Lab ID: 1206995-14
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:36
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:36
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 15:36
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 15:36
Surr: 4-Bromofluorobenzene	*103*			*75-129*	*%REC*	1	6/30/2012 15:36
Surr: Trifluorotoluene	*113*			*75-130*	*%REC*	1	6/30/2012 15:36
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.0014	0.0100	mg/L	2	7/5/2012 15:18
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Acenaphthylene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Benz(a)anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Benzo(b)fluoranthene	U		0.000060	0.00020	mg/L	1	6/29/2012 01:01
Benzo(g,h,i)perylene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Benzo(k)fluoranthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Chrysene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Dibenz(a,h)anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Fluoranthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Fluorene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Indeno(1,2,3-cd)pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Naphthalene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Phenanthrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:01
Surr: 2-Fluorobiphenyl	*56.3*			*40-125*	*%REC*	1	6/29/2012 01:01
Surr: 4-Terphenyl-d14	*83.3*			*40-135*	*%REC*	1	6/29/2012 01:01
Surr: Nitrobenzene-d5	*50.9*			*41-120*	*%REC*	1	6/29/2012 01:01

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-6D
Collection Date: 6/21/2012 10:15 AM

Work Order: 1206995
Lab ID: 1206995-15
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 02:40
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 02:40
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 02:40
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 02:40
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	6/30/2012 02:40
Surr: Trifluorotoluene	*94.0*			*75-130*	*%REC*	1	6/30/2012 02:40
METALS		Method: **SW6020**			Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	U		0.0014	0.0100	mg/L	2	7/5/2012 15:22
LOW-LEVEL PAHS		Method: **SW8270**			Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Acenaphthylene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Benz(a)anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Benzo(b)fluoranthene	U		0.000060	0.00020	mg/L	1	6/29/2012 01:21
Benzo(g,h,i)perylene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Benzo(k)fluoranthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Chrysene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Dibenz(a,h)anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Fluoranthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Fluorene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Indeno(1,2,3-cd)pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Naphthalene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Phenanthrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:21
Surr: 2-Fluorobiphenyl	*56.9*			*40-125*	*%REC*	1	6/29/2012 01:21
Surr: 4-Terphenyl-d14	*78.0*			*40-135*	*%REC*	1	6/29/2012 01:21
Surr: Nitrobenzene-d5	*49.1*			*41-120*	*%REC*	1	6/29/2012 01:21

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: MW-6S
Collection Date: 6/21/2012 11:20 AM

Work Order: 1206995
Lab ID: 1206995-16
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.0010	0.0050	mg/L	5	6/30/2012 17:06
Toluene	U		0.0010	0.0050	mg/L	5	6/30/2012 17:06
Ethylbenzene	U		0.0010	0.0050	mg/L	5	6/30/2012 17:06
Xylenes, Total	U		0.0035	0.015	mg/L	5	6/30/2012 17:06
Surr: 4-Bromofluorobenzene	*103*			*75-129*	*%REC*	5	6/30/2012 17:06
Surr: Trifluorotoluene	*117*			*75-130*	*%REC*	5	6/30/2012 17:06
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	**0.00152**	J	**0.0014**	**0.0100**	**mg/L**	2	7/5/2012 15:56
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Acenaphthylene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Anthracene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Benz(a)anthracene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Benzo(b)fluoranthene	U		0.000060	0.00020	mg/L	1	6/28/2012 19:28
Benzo(g,h,i)perylene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Benzo(k)fluoranthene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Chrysene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Dibenz(a,h)anthracene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Fluoranthene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Fluorene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Indeno(1,2,3-cd)pyrene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Naphthalene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Phenanthrene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Pyrene	U		0.000050	0.00020	mg/L	1	6/28/2012 19:28
Surr: 2-Fluorobiphenyl	*71.7*			*40-125*	*%REC*	1	6/28/2012 19:28
Surr: 4-Terphenyl-d14	*93.6*			*40-135*	*%REC*	1	6/28/2012 19:28
Surr: Nitrobenzene-d5	*74.5*			*41-120*	*%REC*	1	6/28/2012 19:28

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: Dup-1
Collection Date: 6/21/2012 08:00 AM

Work Order: 1206995
Lab ID: 1206995-17
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.0010	0.0050	mg/L	5	6/30/2012 15:54
Toluene	U		0.0010	0.0050	mg/L	5	6/30/2012 15:54
Ethylbenzene	U		0.0010	0.0050	mg/L	5	6/30/2012 15:54
Xylenes, Total	U		0.0035	0.015	mg/L	5	6/30/2012 15:54
Surr: 4-Bromofluorobenzene	*102*			*75-129*	*%REC*	5	6/30/2012 15:54
Surr: Trifluorotoluene	*117*			*75-130*	*%REC*	5	6/30/2012 15:54
METALS			Method: **SW6020**		Prep: SW3010A / 7/2/12		Analyst: **ALR**
Lead	**0.00155**	J	**0.0014**	**0.0100**	**mg/L**	2	7/5/2012 16:21
LOW-LEVEL PAHS			Method: **SW8270**		Prep: SW3510 / 6/28/12		Analyst: **LG**
Acenaphthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Acenaphthylene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Benz(a)anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Benzo(a)pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Benzo(b)fluoranthene	U		0.000060	0.00020	mg/L	1	6/29/2012 01:40
Benzo(g,h,i)perylene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Benzo(k)fluoranthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Chrysene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Dibenz(a,h)anthracene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Fluoranthene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Fluorene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Indeno(1,2,3-cd)pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Naphthalene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Phenanthrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Pyrene	U		0.000050	0.00020	mg/L	1	6/29/2012 01:40
Surr: 2-Fluorobiphenyl	*62.5*			*40-125*	*%REC*	1	6/29/2012 01:40
Surr: 4-Terphenyl-d14	*75.6*			*40-135*	*%REC*	1	6/29/2012 01:40
Surr: Nitrobenzene-d5	*63.9*			*41-120*	*%REC*	1	6/29/2012 01:40

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

ALS Environmental

Date: *17-Jul-12*

Client: ERM Southwest, Inc.
Project: Huntsman
Sample ID: Trip Blank - 060712-88
Collection Date: 6/21/2012

Work Order: 1206995
Lab ID: 1206995-18
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	6/30/2012 04:45
Toluene	U		0.00020	0.0010	mg/L	1	6/30/2012 04:45
Ethylbenzene	U		0.00020	0.0010	mg/L	1	6/30/2012 04:45
Xylenes, Total	U		0.00070	0.0030	mg/L	1	6/30/2012 04:45
Surr: 4-Bromofluorobenzene	*96.9*			*75-129*	*%REC*	1	6/30/2012 04:45
Surr: Trifluorotoluene	*92.4*			*75-130*	*%REC*	1	6/30/2012 04:45

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

ALS Environmental

Work Order: 1206995
Client: ERM Southwest, Inc.
Project: Huntsman

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 62197	**Test Name:** Low-Level PAHs					
1206995-01C	MW-3S	Water	6/19/2012 4:15:00 PM		6/28/2012 03:32 PM	6/28/2012 10:46 PM
1206995-04C	River - UP Stream		6/19/2012 4:55:00 PM		6/28/2012 03:32 PM	6/28/2012 11:05 PM
1206995-05C	River - Down Stream		6/19/2012 5:15:00 PM		6/28/2012 03:32 PM	6/28/2012 11:25 PM
1206995-07C	MW-7		6/20/2012 9:30:00 AM		6/28/2012 03:32 PM	6/28/2012 11:44 PM
1206995-08C	MW-4		6/20/2012 11:00:00 AM		6/28/2012 03:32 PM	6/29/2012 12:03 AM
1206995-11C	MW-14		6/20/2012 2:00:00 PM		6/28/2012 03:32 PM	6/29/2012 06:45 PM
1206995-12C	MW-9S		6/20/2012 3:40:00 PM		6/28/2012 03:32 PM	6/29/2012 12:42 AM
1206995-14C	MW-15		6/21/2012 8:40:00 AM		6/28/2012 03:32 PM	6/29/2012 01:01 AM
1206995-15C	MW-6D		6/21/2012 10:15:00 AM		6/28/2012 03:32 PM	6/29/2012 01:21 AM
1206995-16C	MW-6S		6/21/2012 11:20:00 AM		6/28/2012 03:32 PM	6/28/2012 07:28 PM
1206995-17C	Dup-1		6/21/2012 8:00:00 AM		6/28/2012 03:32 PM	6/29/2012 01:40 AM
Batch ID 62257	**Test Name:** Low-Level PAHs					
1206995-03A	MW-3D	Water	6/19/2012 5:20:00 PM		6/29/2012 04:45 PM	6/29/2012 07:14 PM

ALS Environmental

Work Order: 1206995
Client: ERM Southwest, Inc.
Project: Huntsman

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID 62301	**Test Name:** Metals					
1206995-01B	MW-3S	Water	6/19/2012 4:15:00 PM		7/2/2012 04:00 PM	7/5/2012 02:31 PM
1206995-03B	MW-3D		6/19/2012 5:20:00 PM		7/2/2012 04:00 PM	7/5/2012 02:35 PM
1206995-04B	River - UP Stream		6/19/2012 4:55:00 PM		7/2/2012 04:00 PM	7/5/2012 02:39 PM
1206995-05B	River - Down Stream		6/19/2012 5:15:00 PM		7/2/2012 04:00 PM	7/5/2012 04:25 PM
1206995-07B	MW-7		6/20/2012 9:30:00 AM		7/2/2012 04:00 PM	7/5/2012 02:52 PM
1206995-08B	MW-4		6/20/2012 11:00:00 AM		7/2/2012 04:00 PM	7/5/2012 03:05 PM
1206995-11B	MW-14		6/20/2012 2:00:00 PM		7/2/2012 04:00 PM	7/5/2012 03:09 PM
1206995-12B	MW-9S		6/20/2012 3:40:00 PM		7/2/2012 04:00 PM	7/5/2012 03:14 PM
1206995-14B	MW-15		6/21/2012 8:40:00 AM		7/2/2012 04:00 PM	7/5/2012 03:18 PM
1206995-15B	MW-6D		6/21/2012 10:15:00 AM		7/2/2012 04:00 PM	7/5/2012 03:22 PM
1206995-16B	MW-6S		6/21/2012 11:20:00 AM		7/2/2012 04:00 PM	7/5/2012 03:56 PM
1206995-17B	Dup-1		6/21/2012 8:00:00 AM		7/2/2012 04:00 PM	7/5/2012 04:21 PM

Work Order: 1206995
Client: ERM Southwest, Inc.
Project: Huntsman

DATES REPORT

Sample ID	Client Sample ID	Matrix	Collection Date	TCLP Date	Prep Date	Analysis Date
Batch ID R130393 **Test Name:** BTEX						
1206995-02A	FB-1	Water	6/19/2012 5:35:00 PM			6/29/2012 10:13 PM
1206995-03A	MW-3D		6/19/2012 5:20:00 PM			6/29/2012 10:31 PM
1206995-04A	River - UP Stream		6/19/2012 4:55:00 PM			6/29/2012 10:49 PM
1206995-05A	River - Down Stream		6/19/2012 5:15:00 PM			6/29/2012 11:07 PM
1206995-06A	EB-1		6/19/2012 5:05:00 PM			6/29/2012 11:25 PM
1206995-08A	MW-4		6/20/2012 11:00:00 AM			6/30/2012 12:36 AM
1206995-09A	FB-2		6/20/2012 4:15:00 PM			6/30/2012 12:53 AM
1206995-10A	EB-2		6/20/2012 11:15:00 AM			6/30/2012 01:11 AM
1206995-11A	MW-14		6/20/2012 2:00:00 PM			6/30/2012 01:29 AM
1206995-13A	FB-3		6/21/2012 1:35:00 PM			6/30/2012 02:05 AM
1206995-15A	MW-6D		6/21/2012 10:15:00 AM			6/30/2012 02:40 AM
1206995-18A	Trip Blank - 060712-88		6/21/2012			6/30/2012 04:45 AM
Batch ID R130417 **Test Name:** BTEX						
1206995-01A	MW-3S	Water	6/19/2012 4:15:00 PM			6/30/2012 02:42 PM
1206995-07A	MW-7		6/20/2012 9:30:00 AM			6/30/2012 03:00 PM
1206995-12A	MW-9S		6/20/2012 3:40:00 PM			6/30/2012 03:18 PM
1206995-14A	MW-15		6/21/2012 8:40:00 AM			6/30/2012 03:36 PM
1206995-16A	MW-6S		6/21/2012 11:20:00 AM			6/30/2012 05:06 PM
1206995-17A	Dup-1		6/21/2012 8:00:00 AM			6/30/2012 03:54 PM

ALS Environmental

Date: 17-Jul-12

WorkOrder: 1206995
InstrumentID: BTEX1
Test Code: BTEX_W
Test Number: SW8021B
Test Name: BTEX

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Benzene	71-43-2	0.00051	0.00020	0.0010
A	Ethylbenzene	100-41-4	0.00053	0.00020	0.0010
A	Toluene	108-88-3	0.00051	0.00020	0.0010
M	Xylenes, Total	1330-20-7	0.0015	0.00070	0.0030
S	Surr: 4-Bromofluorobenzene	460-00-4	0	0.00020	0.0010
S	Surr: Trifluorotoluene	98-08-8	0	0.00020	0.0010

ALS Environmental

Date: 17-Jul-12

WorkOrder: 1206995
InstrumentID: ICPMS03
Test Code: ICP_TW
Test Number: SW6020
Test Name: Metals

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Lead	7439-92-1	0.0012	0.00070	0.0050

ALS Environmental

Date: 17-Jul-12

WorkOrder: 1206995
InstrumentID: SV-2
Test Code: 8270_LL_PAH_W
Test Number: SW8270
Test Name: Low-Level PAHs

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Acenaphthene	83-32-9	0.000099	0.000050	0.00020
A	Acenaphthylene	208-96-8	0.00016	0.000050	0.00020
A	Anthracene	120-12-7	0.00014	0.000050	0.00020
A	Benz(a)anthracene	56-55-3	0.00017	0.000050	0.00020
A	Benzo(a)pyrene	50-32-8	0.00015	0.000050	0.00020
A	Benzo(b)fluoranthene	205-99-2	0.00015	0.000060	0.00020
A	Benzo(g,h,i)perylene	191-24-2	0.00019	0.000050	0.00020
A	Benzo(k)fluoranthene	207-08-9	0.00020	0.000050	0.00020
A	Chrysene	218-01-9	0.00019	0.000050	0.00020
A	Dibenz(a,h)anthracene	53-70-3	0.00012	0.000050	0.00020
A	Fluoranthene	206-44-0	0.00017	0.000050	0.00020
A	Fluorene	86-73-7	0.00012	0.000050	0.00020
A	Indeno(1,2,3-cd)pyrene	193-39-5	0.00013	0.000050	0.00020
A	Naphthalene	91-20-3	0.00014	0.000050	0.00020
A	Phenanthrene	85-01-8	0.00015	0.000050	0.00020
A	Pyrene	129-00-0	0.00017	0.000050	0.00020
S	Surr: 2-Fluorobiphenyl	321-60-8	0	0	0.00020
S	Surr: 4-Terphenyl-d14	1718-51-0	0	0	0.00020
S	Surr: Nitrobenzene-d5	4165-60-0	0	0	0.00020

ALS Environmental

Date: 17-Jul-12

WorkOrder: 1206995
InstrumentID: SV-6
Test Code: 8270_LL_PAH_W
Test Number: SW8270
Test Name: Low-Level PAHs

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Acenaphthene	83-32-9	0.00014	0.000050	0.00020
A	Acenaphthylene	208-96-8	0.00013	0.000050	0.00020
A	Anthracene	120-12-7	0.00012	0.000050	0.00020
A	Benz(a)anthracene	56-55-3	0.00016	0.000050	0.00020
A	Benzo(a)pyrene	50-32-8	0.00017	0.000050	0.00020
A	Benzo(b)fluoranthene	205-99-2	0.00020	0.000060	0.00020
A	Benzo(g,h,i)perylene	191-24-2	0.00020	0.000050	0.00020
A	Benzo(k)fluoranthene	207-08-9	0.00022	0.000050	0.00020
A	Chrysene	218-01-9	0.00018	0.000050	0.00020
A	Dibenz(a,h)anthracene	53-70-3	0.00019	0.000050	0.00020
A	Fluoranthene	206-44-0	0.00014	0.000050	0.00020
A	Fluorene	86-73-7	0.00014	0.000050	0.00020
A	Indeno(1,2,3-cd)pyrene	193-39-5	0.00018	0.000050	0.00020
A	Naphthalene	91-20-3	0.00015	0.000050	0.00020
A	Phenanthrene	85-01-8	0.00015	0.000050	0.00020
A	Pyrene	129-00-0	0.00016	0.000050	0.00020
S	Surr: 2-Fluorobiphenyl	321-60-8	0	0	0.00020
S	Surr: 4-Terphenyl-d14	1718-51-0	0	0	0.00020
S	Surr: Nitrobenzene-d5	4165-60-0	0	0	0.00020

ALS Environmental

Date: 17-Jul-12

WorkOrder: 1206995
InstrumentID: SV-6
Test Code: 8270_PAH_LVI
Test Number: SW8270
Test Name: Low-Level PAHs

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Acenaphthene	83-32-9	0.000057	0.000020	0.00010
A	Acenaphthylene	208-96-8	0.000064	0.000020	0.00010
A	Anthracene	120-12-7	0.000068	0.000020	0.00010
A	Benz(a)anthracene	56-55-3	0.000070	0.000020	0.00010
A	Benzo(a)pyrene	50-32-8	0.000066	0.000020	0.00010
A	Benzo(b)fluoranthene	205-99-2	0.000069	0.000020	0.00010
A	Benzo(g,h,i)perylene	191-24-2	0.000095	0.000020	0.00010
A	Benzo(k)fluoranthene	207-08-9	0.000069	0.000020	0.00010
A	Chrysene	218-01-9	0.000070	0.000020	0.00010
A	Dibenz(a,h)anthracene	53-70-3	0.000091	0.000020	0.00010
A	Fluoranthene	206-44-0	0.000059	0.000020	0.00010
A	Fluorene	86-73-7	0.000053	0.000020	0.00010
A	Indeno(1,2,3-cd)pyrene	193-39-5	0.000071	0.000020	0.00010
A	Naphthalene	91-20-3	0.000060	0.000020	0.00010
A	Phenanthrene	85-01-8	0.000058	0.000020	0.00010
A	Pyrene	129-00-0	0.000070	0.000020	0.00010
S	Surr: 2-Fluorobiphenyl	321-60-8	0	0	0.00010
S	Surr: 4-Terphenyl-d14	1718-51-0	0	0	0.00010
S	Surr: Nitrobenzene-d5	4165-60-0	0	0	0.00010

ALS Environmental

Date: 17-Jul-12

Client: ERM Southwest, Inc.

Work Order: 1206995

Project: Huntsman

QC BATCH REPORT

Batch ID: **R130393** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW2-120629-R130393** Units: **µg/L** Analysis Date: **6/29/2012 09:20 PM**

Client ID: Run ID: **BTEX1_120629B** SeqNo: **2841587** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	*30.33*	1.0	*30*	0	*101*	*75-129*	0			
Surr: Trifluorotoluene	*28.61*	1.0	*30*	0	*95.4*	*75-130*	0			

LCS Sample ID: **BLCSW2-120629-R130393** Units: **µg/L** Analysis Date: **6/29/2012 08:44 PM**

Client ID: Run ID: **BTEX1_120629B** SeqNo: **2841585** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.35	1.0	20	0	96.7	75-126	0			
Toluene	19.26	1.0	20	0	96.3	75-125	0			
Ethylbenzene	19.69	1.0	20	0	98.5	75-125	0			
Xylenes, Total	59.43	3.0	60	0	99.1	75-125	0			
Surr: 4-Bromofluorobenzene	*31.18*	1.0	*30*	0	*104*	*75-129*	0			
Surr: Trifluorotoluene	*29.56*	1.0	*30*	0	*98.5*	*75-130*	0			

LCSD Sample ID: **BLCSDW2-120629-R130393** Units: **µg/L** Analysis Date: **6/29/2012 09:02 PM**

Client ID: Run ID: **BTEX1_120629B** SeqNo: **2841586** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.44	1.0	20	0	87.2	75-126	19.35	10.4	20	
Toluene	17.4	1.0	20	0	87	75-125	19.26	10.1	20	
Ethylbenzene	17.74	1.0	20	0	88.7	75-125	19.69	10.4	20	
Xylenes, Total	53.23	3.0	60	0	88.7	75-125	59.43	11	20	
Surr: 4-Bromofluorobenzene	*29.98*	1.0	*30*	0	*99.9*	*75-129*	31.18	*3.93*	*20*	
Surr: Trifluorotoluene	*29.19*	1.0	*30*	0	*97.3*	*75-130*	29.56	*1.25*	*20*	

MS Sample ID: **1206995-16ZMS** Units: **µg/L** Analysis Date: **6/30/2012 03:51 AM**

Client ID: **MW-6S** Run ID: **BTEX1_120629B** SeqNo: **2841608** Prep Date: DF: **20**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	409.8	20	400	0	102	75-126	0			
Toluene	408.2	20	400	0	102	75-125	0			
Ethylbenzene	412	20	400	0	103	75-125	0			
Xylenes, Total	1249	60	1200	0	104	75-125	0			
Surr: 4-Bromofluorobenzene	*605.7*	20	*600*	0	*101*	*75-129*	0			
Surr: Trifluorotoluene	*623.5*	20	*600*	0	*104*	*75-130*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **R130393** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **1206995-16ZMSD** Units: **µg/L** Analysis Date: **6/30/2012 04:09 AM**

Client ID: **MW-6S** Run ID: **BTEX1_120629B** SeqNo: **2841609** Prep Date: DF: **20**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	395.8	20	400	0	99	77-126	409.8	3.48	20	
Toluene	393.7	20	400	0	98.4	75-125	408.2	3.62	20	
Ethylbenzene	398.8	20	400	0	99.7	76-125	412	3.26	20	
Xylenes, Total	1212	60	1200	0	101	75-125	1249	2.98	20	
Surr: 4-Bromofluorobenzene	*616.5*	20	*600*	0	*103*	*75-129*	605.7	*1.76*	*20*	
Surr: Trifluorotoluene	*626.7*	20	*600*	0	*104*	*75-130*	623.5	*0.5*	*20*	

The following samples were analyzed in this batch:

1206995-02A	1206995-03A	1206995-04A
1206995-05A	1206995-06A	1206995-08A
1206995-09A	1206995-10A	1206995-11A
1206995-13A	1206995-15A	1206995-18A

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **R130417** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW1-120630-R130417** Units: **µg/L** Analysis Date: **6/30/2012 02:06 PM**
Client ID: Run ID: **BTEX1_120630A** SeqNo: **2842368** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	*28.96*	1.0	*30*	0	*96.5*	*75-129*	0			
Surr: Trifluorotoluene	*27.37*	1.0	*30*	0	*91.2*	*75-130*	0			

LCS Sample ID: **BLCSW1-120630-R130417** Units: **µg/L** Analysis Date: **6/30/2012 01:30 PM**
Client ID: Run ID: **BTEX1_120630A** SeqNo: **2842366** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.24	1.0	20	0	96.2	75-126	0			
Toluene	19.08	1.0	20	0	95.4	75-125	0			
Ethylbenzene	19.54	1.0	20	0	97.7	75-125	0			
Xylenes, Total	58.79	3.0	60	0	98	75-125	0			
Surr: 4-Bromofluorobenzene	*30.47*	1.0	*30*	0	*102*	*75-129*	0			
Surr: Trifluorotoluene	*28.5*	1.0	*30*	0	*95*	*75-130*	0			

LCSD Sample ID: **BLCSDW1-120630-R130417** Units: **µg/L** Analysis Date: **6/30/2012 01:48 PM**
Client ID: Run ID: **BTEX1_120630A** SeqNo: **2842367** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.4	1.0	20	0	97	75-126	19.24	0.818	20	
Toluene	19.29	1.0	20	0	96.5	75-125	19.08	1.11	20	
Ethylbenzene	19.69	1.0	20	0	98.5	75-125	19.54	0.782	20	
Xylenes, Total	59.24	3.0	60	0	98.7	75-125	58.79	0.771	20	
Surr: 4-Bromofluorobenzene	*29.84*	1.0	*30*	0	*99.5*	*75-129*	30.47	*2.11*	*20*	
Surr: Trifluorotoluene	*28.23*	1.0	*30*	0	*94.1*	*75-130*	28.5	*0.946*	*20*	

MS Sample ID: **1206995-16AMS** Units: **µg/L** Analysis Date: **6/30/2012 05:24 PM**
Client ID: **MW-6S** Run ID: **BTEX1_120630A** SeqNo: **2842378** Prep Date: DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	104.3	5.0	100	0	104	75-126	0			
Toluene	106.8	5.0	100	0	107	75-125	0			
Ethylbenzene	105.7	5.0	100	0	106	75-125	0			
Xylenes, Total	328	15	300	0	109	75-125	0			
Surr: 4-Bromofluorobenzene	*157*	5.0	*150*	0	*105*	*75-129*	0			
Surr: Trifluorotoluene	*141*	5.0	*150*	0	*94*	*75-130*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **R130417** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **1206995-16AMSD** Units: **µg/L** Analysis Date: **6/30/2012 05:42 PM**

Client ID: **MW-6S** Run ID: **BTEX1_120630A** SeqNo: **2842379** Prep Date: DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	95.89	5.0	100	0	95.9	77-126	104.3	8.42	20	
Toluene	96.74	5.0	100	0	96.7	75-125	106.8	9.87	20	
Ethylbenzene	96.68	5.0	100	0	96.7	76-125	105.7	8.94	20	
Xylenes, Total	298.2	15	300	0	99.4	75-125	328	9.5	20	
Surr: 4-Bromofluorobenzene	*153.7*	5.0	*150*	0	*102*	*75-129*	157	*2.1*	*20*	
Surr: Trifluorotoluene	*180*	5.0	*150*	0	*120*	*75-130*	141	*24.3*	*20*	*R*

The following samples were analyzed in this batch:

1206995-01A	1206995-07A	1206995-12A
1206995-14A	1206995-16A	1206995-17A

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62301** Instrument ID **ICPMS03** Method: **SW6020**

MBLK Sample ID: **MBLKW3-070212-62301** Units: **mg/L** Analysis Date: **7/5/2012 02:23 PM**
Client ID: Run ID: **ICPMS03_120705A** SeqNo: **2846542** Prep Date: **7/2/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	U	0.0050								

LCS Sample ID: **MLCSW3-070212-62301** Units: **mg/L** Analysis Date: **7/5/2012 02:27 PM**
Client ID: Run ID: **ICPMS03_120705A** SeqNo: **2846543** Prep Date: **7/2/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.05219	0.0050	0.05	0	104	80-120	0			

MS Sample ID: **1206995-16BMS** Units: **mg/L** Analysis Date: **7/5/2012 04:08 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_120705A** SeqNo: **2846653** Prep Date: **7/2/2012** DF: **2**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.05866	0.010	0.05	0.001521	114	80-120	0			

MSD Sample ID: **1206995-16BMSD** Units: **mg/L** Analysis Date: **7/5/2012 04:12 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_120705A** SeqNo: **2846654** Prep Date: **7/2/2012** DF: **2**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.05758	0.010	0.05	0.001521	112	80-120	0.05866	1.86	15	

DUP Sample ID: **1206995-16BDUP** Units: **mg/L** Analysis Date: **7/5/2012 04:00 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_120705A** SeqNo: **2846584** Prep Date: **7/2/2012** DF: **2**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.001531	0.010	0	0	0	0-0	0.001521	0	25	J

PDS Sample ID: **1206995-16BBS** Units: **mg/L** Analysis Date: **7/5/2012 04:16 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_120705A** SeqNo: **2846655** Prep Date: DF: **2**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.2314	0.010	0.2	0.001521	115	75-125	0			

SD Sample ID: **1206995-16B DIL SX** Units: **mg/L** Analysis Date: **7/5/2012 04:04 PM**
Client ID: **MW-6S** Run ID: **ICPMS03_120705A** SeqNo: **2846587** Prep Date: DF: **10**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Lead	U	0.050	0	0	0	0-0	0.001521	0	10	

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62301** Instrument ID **ICPMS03** Method: **SW6020**

The following samples were analyzed in this batch:

1206995-01B	1206995-03B	1206995-04B
1206995-05B	1206995-07B	1206995-08B
1206995-11B	1206995-12B	1206995-14B
1206995-15B	1206995-16B	1206995-17B

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62197** Instrument ID **SV-6** Method: **SW8270**

MBLK Sample ID: **SBLKW1-120628-62197** Units: **µg/L** Analysis Date: **6/28/2012 06:28 PM**

Client ID: Run ID: **SV-6_120628A** SeqNo: **2839266** Prep Date: **6/28/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	0.20								
Acenaphthylene	U	0.20								
Anthracene	U	0.20								
Benz(a)anthracene	U	0.20								
Benzo(a)pyrene	U	0.20								
Benzo(b)fluoranthene	U	0.20								
Benzo(g,h,i)perylene	U	0.20								
Benzo(k)fluoranthene	U	0.20								
Chrysene	U	0.20								
Dibenz(a,h)anthracene	U	0.20								
Fluoranthene	U	0.20								
Fluorene	U	0.20								
Indeno(1,2,3-cd)pyrene	U	0.20								
Naphthalene	U	0.20								
Phenanthrene	U	0.20								
Pyrene	U	0.20								
Surr: 2-Fluorobiphenyl	*3.924*	0.20	*5*	0	*78.5*	*40-125*	0			
Surr: 4-Terphenyl-d14	*4.448*	0.20	*5*	0	*89*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.677*	0.20	*5*	0	*73.5*	*41-120*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62197** Instrument ID **SV-6** Method: **SW8270**

LCS Sample ID: **SLCSW-120628-62197** Units: **µg/L** Analysis Date: **6/28/2012 06:48 PM**

Client ID: Run ID: **SV-6_120628A** SeqNo: **2839254** Prep Date: **6/28/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.629	0.20	5	0	72.6	45-120	0			
Acenaphthylene	3.995	0.20	5	0	79.9	47-120	0			
Anthracene	3.966	0.20	5	0	79.3	45-120	0			
Benz(a)anthracene	4.178	0.20	5	0	83.6	40-120	0			
Benzo(a)pyrene	3.967	0.20	5	0	79.3	45-120	0			
Benzo(b)fluoranthene	4.659	0.20	5	0	93.2	50-120	0			
Benzo(g,h,i)perylene	4.103	0.20	5	0	82.1	42-127	0			
Benzo(k)fluoranthene	3.901	0.20	5	0	78	45-127	0			
Chrysene	3.969	0.20	5	0	79.4	43-120	0			
Dibenz(a,h)anthracene	4.173	0.20	5	0	83.5	45-125	0			
Fluoranthene	3.971	0.20	5	0	79.4	45-125	0			
Fluorene	4.015	0.20	5	0	80.3	49-120	0			
Indeno(1,2,3-cd)pyrene	4.39	0.20	5	0	87.8	41-128	0			
Naphthalene	4.075	0.20	5	0	81.5	45-120	0			
Phenanthrene	3.809	0.20	5	0	76.2	45-121	0			
Pyrene	3.912	0.20	5	0	78.2	40-130	0			
Surr: 2-Fluorobiphenyl	*4.108*	0.20	*5*	0	*82.2*	*40-125*	0			
Surr: 4-Terphenyl-d14	*4.772*	0.20	*5*	0	*95.4*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.862*	0.20	*5*	0	*77.2*	*41-120*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62197** Instrument ID **SV-6** Method: **SW8270**

LCSD Sample ID: **SLCSDW1-120628-62197** Units: **µg/L** Analysis Date: **6/28/2012 07:08 PM**

Client ID: Run ID: **SV-6_120628A** SeqNo: **2839255** Prep Date: **6/28/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.819	0.20	5	0	76.4	45-120	3.629	5.11	20	
Acenaphthylene	4.221	0.20	5	0	84.4	47-120	3.995	5.51	20	
Anthracene	4.241	0.20	5	0	84.8	45-120	3.966	6.7	20	
Benz(a)anthracene	4.367	0.20	5	0	87.3	40-120	4.178	4.42	20	
Benzo(a)pyrene	4.254	0.20	5	0	85.1	45-120	3.967	6.99	20	
Benzo(b)fluoranthene	4.92	0.20	5	0	98.4	50-120	4.659	5.45	20	
Benzo(g,h,i)perylene	4.414	0.20	5	0	88.3	42-127	4.103	7.29	20	
Benzo(k)fluoranthene	4.252	0.20	5	0	85	45-127	3.901	8.6	20	
Chrysene	4.082	0.20	5	0	81.6	43-120	3.969	2.82	20	
Dibenz(a,h)anthracene	4.461	0.20	5	0	89.2	45-125	4.173	6.67	20	
Fluoranthene	4.27	0.20	5	0	85.4	45-125	3.971	7.27	20	
Fluorene	4.31	0.20	5	0	86.2	49-120	4.015	7.08	20	
Indeno(1,2,3-cd)pyrene	4.704	0.20	5	0	94.1	41-128	4.39	6.91	20	
Naphthalene	4.196	0.20	5	0	83.9	45-120	4.075	2.93	20	
Phenanthrene	4.103	0.20	5	0	82.1	45-121	3.809	7.43	20	
Pyrene	3.995	0.20	5	0	79.9	40-130	3.912	2.09	20	
Surr: 2-Fluorobiphenyl	*4.331*	0.20	*5*	0	*86.6*	*40-125*	4.108	*5.3*	*0*	
Surr: 4-Terphenyl-d14	*4.773*	0.20	*5*	0	*95.5*	*40-135*	4.772	*0.0137*	*0*	
Surr: Nitrobenzene-d5	*3.874*	0.20	*5*	0	*77.5*	*41-120*	3.862	*0.303*	*0*	

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62197** Instrument ID **SV-6** Method: **SW8270**

MS Sample ID: **1206995-16CMS** Units: **µg/L** Analysis Date: **6/28/2012 07:48 PM**

Client ID: **MW-6S** Run ID: **SV-6_120628A** SeqNo: **2839257** Prep Date: **6/28/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.491	0.20	5	0	69.8	45-120	0			
Acenaphthylene	3.873	0.20	5	0	77.5	47-120	0			
Anthracene	3.643	0.20	5	0	72.9	45-120	0			
Benz(a)anthracene	3.811	0.20	5	0	76.2	40-120	0			
Benzo(a)pyrene	3.743	0.20	5	0	74.9	45-120	0			
Benzo(b)fluoranthene	3.971	0.20	5	0	79.4	50-120	0			
Benzo(g,h,i)perylene	3.765	0.20	5	0	75.3	42-127	0			
Benzo(k)fluoranthene	3.573	0.20	5	0	71.5	45-127	0			
Chrysene	3.609	0.20	5	0	72.2	43-120	0			
Dibenz(a,h)anthracene	3.925	0.20	5	0	78.5	45-125	0			
Fluoranthene	3.714	0.20	5	0	74.3	45-125	0			
Fluorene	3.883	0.20	5	0	77.7	49-120	0			
Indeno(1,2,3-cd)pyrene	3.994	0.20	5	0	79.9	41-128	0			
Naphthalene	3.746	0.20	5	0	74.9	45-120	0			
Phenanthrene	3.545	0.20	5	0	70.9	45-121	0			
Pyrene	3.509	0.20	5	0	70.2	40-130	0			
Surr: 2-Fluorobiphenyl	*3.83*	0.20	*5*	0	*76.6*	*40-125*	0			
Surr: 4-Terphenyl-d14	*4.112*	0.20	*5*	0	*82.2*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.535*	0.20	*5*	0	*70.7*	*41-120*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62197** Instrument ID **SV-6** Method: **SW8270**

MSD Sample ID: **1206995-16CMSD** Units: **µg/L** Analysis Date: **6/28/2012 08:08 PM**

Client ID: **MW-6S** Run ID: **SV-6_120628A** SeqNo: **2839258** Prep Date: **6/28/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.293	0.20	5	0	65.9	45-120	3.491	5.83	20	
Acenaphthylene	3.675	0.20	5	0	73.5	47-120	3.873	5.25	20	
Anthracene	3.736	0.20	5	0	74.7	45-120	3.643	2.51	20	
Benz(a)anthracene	3.686	0.20	5	0	73.7	40-120	3.811	3.35	20	
Benzo(a)pyrene	3.792	0.20	5	0	75.8	45-120	3.743	1.28	20	
Benzo(b)fluoranthene	4.519	0.20	5	0	90.4	50-120	3.971	12.9	20	
Benzo(g,h,i)perylene	3.762	0.20	5	0	75.2	42-127	3.765	0.0789	20	
Benzo(k)fluoranthene	3.756	0.20	5	0	75.1	45-127	3.573	5	20	
Chrysene	3.631	0.20	5	0	72.6	43-120	3.609	0.609	20	
Dibenz(a,h)anthracene	3.993	0.20	5	0	79.9	45-125	3.925	1.73	20	
Fluoranthene	3.817	0.20	5	0	76.3	45-125	3.714	2.75	20	
Fluorene	3.658	0.20	5	0	73.2	49-120	3.883	5.97	20	
Indeno(1,2,3-cd)pyrene	3.867	0.20	5	0	77.3	41-128	3.994	3.21	20	
Naphthalene	3.816	0.20	5	0	76.3	45-120	3.746	1.86	20	
Phenanthrene	3.709	0.20	5	0	74.2	45-121	3.545	4.5	20	
Pyrene	3.415	0.20	5	0	68.3	40-130	3.509	2.7	20	
Surr: 2-Fluorobiphenyl	*3.773*	0.20	*5*	0	*75.5*	*40-125*	3.83	*1.49*	*0*	
Surr: 4-Terphenyl-d14	*4.132*	0.20	*5*	0	*82.6*	*40-135*	4.112	*0.497*	*0*	
Surr: Nitrobenzene-d5	*3.524*	0.20	*5*	0	*70.5*	*41-120*	3.535	*0.304*	*0*	

The following samples were analyzed in this batch:

1206995-01C	1206995-04C	1206995-05C
1206995-07C	1206995-08C	1206995-11C
1206995-12C	1206995-14C	1206995-15C
1206995-16C	1206995-17C	

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62257** Instrument ID **SV-6** Method: **SW8270**

MBLK Sample ID: **SBLKL1-120629-62257** Units: **µg/L** Analysis Date: **6/29/2012 06:16 PM**

Client ID: Run ID: **SV-6_120629A** SeqNo: **2841213** Prep Date: **6/29/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	0.10								
Acenaphthylene	U	0.10								
Anthracene	U	0.10								
Benz(a)anthracene	U	0.10								
Benzo(a)pyrene	U	0.10								
Benzo(b)fluoranthene	U	0.10								
Benzo(g,h,i)perylene	U	0.10								
Benzo(k)fluoranthene	U	0.10								
Chrysene	U	0.10								
Dibenz(a,h)anthracene	U	0.10								
Fluoranthene	U	0.10								
Fluorene	U	0.10								
Indeno(1,2,3-cd)pyrene	U	0.10								
Naphthalene	U	0.10								
Phenanthrene	U	0.10								
Pyrene	U	0.10								
Surr: 2-Fluorobiphenyl	*3.742*	0.10	*3.03*	0	*123*	*40-125*	0			
Surr: 4-Terphenyl-d14	*3.299*	0.10	*3.03*	0	*109*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.381*	0.10	*3.03*	0	*112*	*41-120*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62257** Instrument ID **SV-6** Method: **SW8270**

LCS Sample ID: **SLCSL1-120629-62257** Units: **µg/L** Analysis Date: **6/29/2012 06:35 PM**

Client ID: Run ID: **SV-6_120629A** SeqNo: **2841214** Prep Date: **6/29/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.009	0.10	3.03	0	99.3	40-140	0			
Acenaphthylene	3.215	0.10	3.03	0	106	40-140	0			
Anthracene	3.158	0.10	3.03	0	104	40-140	0			
Benz(a)anthracene	2.762	0.10	3.03	0	91.1	40-140	0			
Benzo(a)pyrene	2.637	0.10	3.03	0	87	40-140	0			
Benzo(b)fluoranthene	2.672	0.10	3.03	0	88.2	40-140	0			
Benzo(g,h,i)perylene	2.451	0.10	3.03	0	80.9	40-140	0			
Benzo(k)fluoranthene	2.493	0.10	3.03	0	82.3	40-140	0			
Chrysene	2.692	0.10	3.03	0	88.8	40-140	0			
Dibenz(a,h)anthracene	2.521	0.10	3.03	0	83.2	40-140	0			
Fluoranthene	3.045	0.10	3.03	0	100	40-140	0			
Fluorene	2.754	0.10	3.03	0	90.9	40-140	0			
Indeno(1,2,3-cd)pyrene	2.506	0.10	3.03	0	82.7	40-140	0			
Naphthalene	2.954	0.10	3.03	0	97.5	40-140	0			
Phenanthrene	3.083	0.10	3.03	0	102	40-140	0			
Pyrene	2.952	0.10	3.03	0	97.4	40-140	0			
Surr: 2-Fluorobiphenyl	*3.741*	0.10	*3.03*	0	*123*	*40-125*	0			
Surr: 4-Terphenyl-d14	*3.022*	0.10	*3.03*	0	*99.7*	*40-135*	0			
Surr: Nitrobenzene-d5	*3.211*	0.10	*3.03*	0	*106*	*41-120*	0			

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

Client: ERM Southwest, Inc.
Work Order: 1206995
Project: Huntsman

QC BATCH REPORT

Batch ID: **62257** Instrument ID **SV-6** Method: **SW8270**

LCSD Sample ID: **SLCSDL1-120629-62257** Units: **µg/L** Analysis Date: **6/29/2012 06:54 PM**

Client ID: Run ID: **SV-6_120629A** SeqNo: **2841215** Prep Date: **6/29/2012** DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	3.025	0.10	3.03	0	99.8	40-140	3.009	0.522	25	
Acenaphthylene	3.226	0.10	3.03	0	106	40-140	3.215	0.339	25	
Anthracene	3.131	0.10	3.03	0	103	40-140	3.158	0.858	25	
Benz(a)anthracene	2.706	0.10	3.03	0	89.3	40-140	2.762	2.04	25	
Benzo(a)pyrene	2.61	0.10	3.03	0	86.1	40-140	2.637	1	25	
Benzo(b)fluoranthene	2.619	0.10	3.03	0	86.4	40-140	2.672	2.03	25	
Benzo(g,h,i)perylene	2.447	0.10	3.03	0	80.8	40-140	2.451	0.181	25	
Benzo(k)fluoranthene	2.431	0.10	3.03	0	80.2	40-140	2.493	2.51	25	
Chrysene	2.617	0.10	3.03	0	86.4	40-140	2.692	2.83	25	
Dibenz(a,h)anthracene	2.513	0.10	3.03	0	82.9	40-140	2.521	0.303	25	
Fluoranthene	2.951	0.10	3.03	0	97.4	40-140	3.045	3.11	25	
Fluorene	2.744	0.10	3.03	0	90.6	40-140	2.754	0.381	25	
Indeno(1,2,3-cd)pyrene	2.759	0.10	3.03	0	91	40-140	2.506	9.6	25	
Naphthalene	3.05	0.10	3.03	0	101	40-140	2.954	3.18	25	
Phenanthrene	3.045	0.10	3.03	0	100	40-140	3.083	1.23	25	
Pyrene	2.874	0.10	3.03	0	94.8	40-140	2.952	2.67	25	
Surr: 2-Fluorobiphenyl	*3.604*	0.10	*3.03*	0	*119*	*40-125*	3.741	*3.73*	*25*	
Surr: 4-Terphenyl-d14	*2.904*	0.10	*3.03*	0	*95.8*	*40-135*	3.022	*4.01*	*25*	
Surr: Nitrobenzene-d5	*3.048*	0.10	*3.03*	0	*101*	*41-120*	3.211	*5.2*	*25*	

The following samples were analyzed in this batch: 1206995-03A

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

Client: ERM Southwest, Inc.
Project: Huntsman
WorkOrder: **1206995**

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

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 Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name: **ERMSW-AUST** Date/Time Received: **23-Jun-12 09:25**

Work Order: **1206995** Received by: **RDH**

Checklist completed by Paresh M. Gjga 25-Jun-12 Reviewed by: Patricia L. Lynch 27-Jun-12
eSignature Date 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 ☐	
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,3.2c,2.3c,3.4c C/U	003	
Cooler(s)/Kit(s):	4226, 2659, 3504, 2678,		
Date/Time sample(s) sent to storage:	6/25/12 13:10		
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: MW-3D - received 1 x broken amber bottle. Sampling times for FB-1, FB-2, & FB-3 do not match - Logged in per chain.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

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 5

COC ID: 56768

1206995

ERMSW-AUST: ERM Southwest, Inc.

Project: Huntsman

ALS Project Manager:

Customer Information		Project Information	
Purchase Order		Project Name	[illegible]
Work Order		Project Number	0137452
Company Name	[illegible]	Bill To Company	[illegible]
Send Report To	JENNIFER WAGGONER	Invoice Attn	[illegible]
Address	206 EAST 9TH ST STE 1700 AUSTIN TX 78701	Address	SAME
City/State/Zip		City/State/Zip	[illegible]
Phone		Phone	[illegible]
Fax	512-374-2224	Fax	[illegible]
e-Mail Address	JENNIFER.WAGGONER@ERM.COM	e-Mail Address	[illegible]

No.	Sample Description	Date	Time	Matrix	Preservation	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-35	6/19/12	1615	WATER	HCL	3	X										
2					2,8	1		X									
3					8	2			X								
4	FB-1	6/19/12	1735	WATER	1,8	3	X										
5	MW-30	6/19/12	1720	WATER	1,8	3	X										
6					2,8	1		X									
7					8	2			X								
8	RIVER-UPSTREAM	6/19/12	1655	WATER	1,8	3	X										
9					2,8	1		X									
10					8	2			X								

Sample(s) Please Print & Sign: [illegible]

Shipment Method: FEDEX

Required Turnaround Time: (Check Box)

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
[illegible]	6/20/12	0800		

Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp	COC Package: (Check One Box Below)
			[illegible] 6/23/12 815			

Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

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.

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 Charleston, WV +1 304 356 3168
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

COC ID: 56769

ALS Project Manager:

ALS Work Order #: 1206995

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	See P. 1	Project Name		A
Work Order		Project Number		B
Company Name		Bill To Company		C
Send Report To		Invoice Attn		D
Address		Address		E / F
City/State/Zip		City/State/Zip		G
Phone		Phone		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	~~EB~~ EB + RIVER-COUNTSTREAM	6/19/12	1705	WATER	1,8	3	X										
2					2,8	1		X									
3					8	2			X								
4	EB-)	6/19/12	1705	WATER	1,8	3	X										
5	MW-7	6/20/12	0930	WATER	1,8	3	X										
6					2,8	1		X									
7					8	2			X								
8	MW-4	6/20/12	1100	WATER	1,8	3	X										
9					2,8	1		X									
10					8	2			X								

Special Instructions / Special Report Formatting:

Shipment Method: FEDEX

Required Turnaround Time: (Check Box)

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Notes:
Randolph Allen	6/20/12	0800				
Relinquished by:	Date:	Time:	Received by (Laboratory):	Date:	Time:	Cooler ID / Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			QC Package: (Check One Box Below)

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.

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
Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168 | 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 3 of 5

COC ID: 56771

ALS Project Manager: | ALS Work Order #: 1256997

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	See P.1	Project Name		A
Work Order		Project Number		B
Company Name		Bill To Company		C
Send Report To		Invoice Attn		D
Address		Address		E, F
City/State/Zip		City/State/Zip		G
Phone		Phone		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	FB-2	6/20/12	1615	WATER	1,8	3	X										
2	FB-2	6/20/12	1115	WATER	1,8	3	X										
3	MW-14	6/20/12	1460	WATER	1,8	3	X										
4	↓	↓	↓	↓	2,8	1		X									
5	↓	↓	↓	↓	8	2			X								
6	MW-9S	6/20/12	1540	WATER	1,8	3	X										
7	↓	↓	↓	↓	2,8	1		X									
8	↓	↓	↓	↓	8	2			X								
9	FB-3	6/21/12	1335	WATER	1,8	3	X										
10																	

Sampler(s) Please Print & Sign: [illegible]

Shipment Method: FEDEX

Required Turnaround Time: (Check Box)

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	Notes:
[illegible]	6/22/12	0800	[illegible]	6/22/12	0925	
Relinquished by:	Date:	Time:	Received by (Laboratory):			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):			

Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)
		Level I SW-846 CLP
		Level II SW-846 CLP
		Level III SW-846 CLP
		Level IV SW-846 CLP
		EDD (DIGITAL)

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

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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

COC ID: 56770

ALS Project Manager:

ALS Work Order #: 1256995

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	See p.1	Project Name		A STEX (8021)
Work Order		Project Number		B Total Metals (6020/7000), Pb
Company Name		Bill To Company		C Total Lead, Chloride (9056)
Send Report To		Invoice Attn		D
Address		Address		E
City/State/Zip		City/State/Zip		F
Phone		Phone		G
Fax		Fax		H
e-Mail Address		e-Mail Address		I
				J

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-15	6/21/12	0840	WATER	1,8	3	X										
2	↓	↓	↓	↓	2,8	1		X									
3	↓	↓	↓	↓	8	2			X								
4	MW-60	6/21/12	1015	WATER	1,8	3	X										
5	↓	↓	↓	↓	2,8	1		X									
6	↓	↓	↓	↓	8	2			X								
7	MW-65	6/21/12	1120	WATER	1,8	3	X										
8	↓	↓	↓	↓	2,8	1		X									
9	↓	↓	↓	↓	8	2			X								
10																	

Sampled / Relinquished by: Randolph Ortlieb — Date: 6/22/12 — Time: 0800

Shipment Method: FEDEX

Required Turnaround Time: (Check Box): 5 Day | 3 Day | 2 Day | 1 Day

Results Due Date:

Received by: — Date: — Time:

Relinquished by: — Date: — Time:

Received by (Laboratory): [signature] 6/23/12 0825

Notes:

Logged by (Laboratory): — Date: — Time:

Checked by (Laboratory):

Cooler ID: — Cooler Temp.: — QC Package: (Check One Box Below)

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

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Everett, WA +1 425 356 2600 | 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

COC ID: 56773

ALS Project Manager: | ALS Work Order #: 1206985

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	See P.1	Project Name		A
Work Order		Project Number		B
Company Name		Bill To Company		C
Send Report To		Invoice Attn		D
Address		Address		E
City/State/Zip		City/State/Zip		F
Phone		Phone		G
Fax		Fax		H
e-Mail Address		e-Mail Address		I

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-65 MS	6/21/12	1120	WATER	1,8	3	X										
2	↓	↓	↓	↓	2,8	1		X									
3	↓	↓	↓	↓	8	2			X								
4	MW-65 MSD	6/21/12	1120	WATER	1,8	3	X										
5	↓	↓	↓	↓	2,8	1		X									
6	↓	↓	↓	↓	8	2			X								
7	DUP-1	6/21/12	0800	WATER	1,8	3	X										
8	↓	↓	↓	↓	2,8	1		X									
9	↓	↓	↓	↓	8	2			X								
10	TRIP BLANK	—	—	WATER	1,8	2	X										

Sampled/Relinquished by: [signature] | Shipment Method: FEDEX | Required Turnaround Time: (Check Box) | Results Due Date:

Relinquished by: [signature] Date: 6/22/12 Time: 0800 | Received by: [signature] Date: 6/23/12 Time: 0825 | Notes:

Logged by (Laboratory): Date: Time: | Checked by (Laboratory):

Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)

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.

From: (915) 775-3202
ERM-SW
ERM-SW
150 Texano RD

El Paso, TX 79905

Origin ID: ELPA

FedEx Express

Ship Date: 22JUN12
ActWgt: 25.0 LB
CAD: 5919001/INET3300

Delivery Address Bar Code

SHIP TO: (281) 530-5656
BILL SENDER

Bethany McDaniel
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

Ref # 0137452
Invoice #
PO #
Dept #

1 of 5

TRK# 0201 7937 1249 0351

SATURDAY ### A2
PRIORITY OVERNIGHT

MASTER
X0 SGRA

77099
TX-US
IAH

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

CUSTODY SEAL

Date: 6/22/12
Name:
Company:

Time:

Seal #

2.5°C

From: (915) 775-3202 Origin ID: ELPA
ERM-SW
ERM-SW
150 Texaco RD

El Paso, TX 79905

FedEx Express

Ship Date: 22JUN12
ActWgt: 25.0 LB
CAD: 5918001/INET3300

Delivery Address Bar Code

Ref # 0137452
Invoice #
PO #
Dept #

SHIP TO: (281) 530-5656 BILL SENDER

Bethany McDaniel
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

2 of 5

SATURDAY ### A2
PRIORITY OVERNIGHT

MPS# 7937 1249 0395

Mstr# 7937 1249 0351

77099
TX-US
IAH

X0 SGRA

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

Date: 6/22
Name:
Company:

CUSTODY SEAL

Date: 6/22/12
Time:

Sample Receipt By:


From (915) 775-3202
ERM SW
ERM SW
150 Texas 7D
El Paso, TX 79905

Origin ID: ELPA

FedEx Express

Ship Date: 22JUN12
ActWgt: 25.0 LB
CAD: 5919001/NET3900

Delivery Address Bar Code

Ref # 0137452
Invoice #
PO #
Dept #

SHIP TO: (281) 530-5856
BILL SENDER

Bethany McDaniel
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

3 of 5

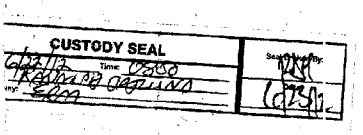
SATURDAY ### A2
PRIORITY OVERNIGHT

MPS# 7937 1249 0432
Mstr# 7937 1249 0351

77099
TX-US
IAH

X0 SGRA


ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5856
Fax. +1 281 530 5887


CUSTODY SEAL
Time: 0800

From: (915) 775-3202
ERM-SW
ERM-SW
150 Texas RD
El Paso, TX 79905

Origin ID: ELPA

Ship Date: 22JUN12
ActWgt: 25.0 LB
CAD: 5919001/INET3300

Delivery Address Bar Code

Ref # 0137452
Invoice #
PO #
Dept #

SHIP TO: (281) 530-5656
BILL SENDER

Bethany McDaniel
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

4 of 5

SATURDAY ### A2
PRIORITY OVERNIGHT

MPS# 7937 1249 0465
Mstr# 7937 1249 0351

77099
TX-US
IAH

X0 SGRA

5153-9C5A0A4

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

CUSTODY SEAL

07-Aug-2012

Jennifer Warfield
ERM Southwest, Inc.
206 E. 9th Street
Suite 1700
Austin, TX 78701

Tel: (512) 374-2224
Fax: (512) 459-4711

Re: Huntsman Brickland Refinery Work Order: **12071085**

Dear Jennifer,

ALS Environmental received 5 samples on 24-Jul-2012 09:30 AM for the analyses 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.

The total number of pages in this report is 21.

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

Sincerely,

Patricia L. Lynch

Electronically approved by: Jumoke M. Lawal

Patricia L. Lynch
Project Manager

Certificate No: TX: T104704231-12-10

ALS Environmental

Date: *07-Aug-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: 12071085

TRRP Laboratory Data Package Cover Page

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	ERM Southwest, Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Huntsman Brickland Refinery	
Work Order:	12071085	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Patricia L. Lynch

Patricia L. Lynch
Project Manager

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 08/07/2012					
Project Name: Huntsman Brickland Refinery			Laboratory Job Number: 12071085					
Reviewer Name: Pat Lynch			Prep Batch Number(s): R131986, R132012					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?			X			
		Were % moisture (or solids) reported for all soil and sediment samples?			X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X					
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1	
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?			X			
		Were analytical duplicates analyzed at the appropriate frequency?			X			
		Were RPDs or relative standard deviations within the laboratory QC limits?			X			
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 08/07/2012					
Project Name: Huntsman Brickland Refinery			Laboratory Job Number: 12071085					
Reviewer Name: Pat Lynch			Prep Batch Number(s): R131986, R132012					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
S1	OI	**Initial calibration (ICAL)**						
		Were response factors and/or relative response factors for each analyte within QC limits?	X					
		Were percent RSDs or correlation coefficient criteria met?	X					
		Was the number of standards recommended in the method used for all analytes?	X					
		Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		Are ICAL data available for all instruments used?	X					
		Has the initial calibration curve been verified using an appropriate second source standard?	X					
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**						
		Was the CCV analyzed at the method-required frequency?	X					
		Were percent differences for each analyte within the method-required QC limits?	X					
		Was the ICAL curve verified for each analyte?	X					
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X			
S3	O	**Mass spectral tuning:**						
		Was the appropriate compound for the method used for tuning?	X					
		Were ion abundance data within the method-required QC limits?	X					
S4	O	**Internal standards (IS):**						
		Were IS area counts and retention times within the method-required QC limits?	X					
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section						
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X					
		Were data associated with manual integrations flagged on the raw data?	X					
S6	O	**Dual column confirmation**						
		Did dual column confirmation results meet the method-required QC?		X			2	
S7	O	**Tentatively identified compounds (TICs):**						
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X			
S8	I	**Interference Check Sample (ICS) results:**						
		Were percent recoveries within method QC limits?			X			
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**						
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X			
S10	OI	**Method detection limit (MDL) studies**						
		Was a MDL study performed for each reported analyte?	X					
		Is the MDL either adjusted or supported by the analysis of DCSs?	X					
S11	OI	**Proficiency test reports:**						
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X					
S12	OI	**Standards documentation**						
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X					
S13	OI	**Compound/analyte identification procedures**						
		Are the procedures for compound/analyte identification documented?	X					
S14	OI	**Demonstration of analyst competency (DOC)**						
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X					
		Is documentation of the analyst's competency up-to-date and on file?	X					
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)						
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X					
S16	OI	**Laboratory standard operating procedures (SOPs):**						
		Are laboratory SOPs current and on file for each method performed?	X					

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Reportable Data		
Laboratory Name: ALS Laboratory Group		LRC Date: 08/07/2012
Project Name: Huntsman Brickland Refinery		Laboratory Job Number: 12071085
Reviewer Name: Pat Lynch		Prep Batch Number(s): R131986, R132012
ER#[5]	**Description**	
1	Batch R131986, BTEX, Sample 1207988-07: MS/MSD is for an unrelated sample. Batch R132012, BTEX, Sample MW-5: MSD recovery is flagged for benzene due to significant figures and rounding. MS and MSD results are flagged with O because the benzene concentration in the background sample is greater than four times the amount in the spike.	
2	Ethylbenzene results are P qualified in samples MW-5 and MW-10. This indicates possible coelution or matrix interference on the confirming column. The lower of the two results is reported as required by the method.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

ALS Environmental

Date: 07-Aug-12

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: **12071085**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
12071085-01	MW-5	Water		7/20/2012 14:15	7/24/2012 09:30	☐
12071085-02	MW-8	Water		7/20/2012 15:20	7/24/2012 09:30	☐
12071085-03	MW-10	Water		7/20/2012 17:00	7/24/2012 09:30	☐
12071085-04	FB-1	Water		7/20/2012 13:30	7/24/2012 09:30	☐
12071085-05	TB-1	Water		7/20/2012	7/24/2012 09:30	☐

ALS Environmental

Date: *07-Aug-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-5
Collection Date: 7/20/2012 02:15 PM

Work Order: 12071085
Lab ID: 12071085-01
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	**0.40**		**0.0010**	**0.0050**	**mg/L**	5	7/27/2012 13:45
Toluene	**0.0023**	J	**0.0010**	**0.0050**	**mg/L**	5	7/27/2012 13:45
Ethylbenzene	**0.0014**	JP	**0.0010**	**0.0050**	**mg/L**	5	7/27/2012 13:45
Xylenes, Total	**0.026**		**0.0035**	**0.015**	**mg/L**	5	7/27/2012 13:45
Surr: 4-Bromofluorobenzene	*97.0*			*75-129*	*%REC*	5	7/27/2012 13:45
Surr: Trifluorotoluene	*109*			*75-130*	*%REC*	5	7/27/2012 13:45

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

ALS Environmental

Date: *07-Aug-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-8
Collection Date: 7/20/2012 03:20 PM

Work Order: 12071085
Lab ID: 12071085-02
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	**2.7**		**0.0040**	**0.020**	**mg/L**	20	7/27/2012 15:08
Toluene	**0.0061**	J	**0.0040**	**0.020**	**mg/L**	20	7/27/2012 15:08
Ethylbenzene	**0.0072**	J	**0.0040**	**0.020**	**mg/L**	20	7/27/2012 15:08
Xylenes, Total	U		0.014	0.060	mg/L	20	7/27/2012 15:08
Surr: 4-Bromofluorobenzene	*102*			*75-129*	*%REC*	20	7/27/2012 15:08
Surr: Trifluorotoluene	*120*			*75-130*	*%REC*	20	7/27/2012 15:08

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

ALS Environmental

Date: *07-Aug-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-10
Collection Date: 7/20/2012 05:00 PM

Work Order: 12071085
Lab ID: 12071085-03
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	**0.012**		**0.00020**	**0.0010**	**mg/L**	1	7/27/2012 15:26
Toluene	**0.0013**		**0.00020**	**0.0010**	**mg/L**	1	7/27/2012 15:26
Ethylbenzene	**0.00039**	JP	**0.00020**	**0.0010**	**mg/L**	1	7/27/2012 15:26
Xylenes, Total	**0.019**		**0.00070**	**0.0030**	**mg/L**	1	7/27/2012 15:26
Surr: 4-Bromofluorobenzene	*114*			*75-129*	*%REC*	1	7/27/2012 15:26
Surr: Trifluorotoluene	*102*			*75-130*	*%REC*	1	7/27/2012 15:26

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

ALS Environmental

Date: *07-Aug-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: FB-1
Collection Date: 7/20/2012 01:30 PM

Work Order: 12071085
Lab ID: 12071085-04
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	7/27/2012 07:31
Toluene	U		0.00020	0.0010	mg/L	1	7/27/2012 07:31
Ethylbenzene	U		0.00020	0.0010	mg/L	1	7/27/2012 07:31
Xylenes, Total	U		0.00070	0.0030	mg/L	1	7/27/2012 07:31
Surr: 4-Bromofluorobenzene	*99.5*			*75-129*	*%REC*	1	7/27/2012 07:31
Surr: Trifluorotoluene	*103*			*75-130*	*%REC*	1	7/27/2012 07:31

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

ALS Environmental

Date: *07-Aug-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: TB-1
Collection Date: 7/20/2012

Work Order: 12071085
Lab ID: 12071085-05
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	7/27/2012 07:49
Toluene	U		0.00020	0.0010	mg/L	1	7/27/2012 07:49
Ethylbenzene	U		0.00020	0.0010	mg/L	1	7/27/2012 07:49
Xylenes, Total	U		0.00070	0.0030	mg/L	1	7/27/2012 07:49
Surr: 4-Bromofluorobenzene	*99.3*			*75-129*	*%REC*	1	7/27/2012 07:49
Surr: Trifluorotoluene	*99.0*			*75-130*	*%REC*	1	7/27/2012 07:49

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

ALS Environmental

Date: 07-Aug-12

WorkOrder: 12071085
InstrumentID: BTEX1
Test Code: BTEX_W
Test Number: SW8021B
Test Name: BTEX

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Benzene	71-43-2	0.00051	0.00020	0.0010
A	Ethylbenzene	100-41-4	0.00049	0.00020	0.0010
A	Toluene	108-88-3	0.00051	0.00020	0.0010
M	Xylenes, Total	1330-20-7	0.0015	0.00070	0.0030
S	Surr: 4-Bromofluorobenzene	460-00-4	0	0.00020	0.0010
S	Surr: Trifluorotoluene	98-08-8	0	0.00020	0.0010

ALS Environmental

Date: 07-Aug12

Client: ERM Southwest, Inc.

Work Order: 12071085

Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R131986** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW2-120726-R131986** Units: **µg/L** Analysis Date: **7/26/2012 11:49 PM**

Client ID: Run ID: **BTEX1_120726C** SeqNo: **2877476** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	*30.15*	1.0	*30*	0	*101*	*75-129*	0			
Surr: Trifluorotoluene	*29.46*	1.0	*30*	0	*98.2*	*75-130*	0			

LCS Sample ID: **BLCSW2-120726-R131986** Units: **µg/L** Analysis Date: **7/26/2012 11:14 PM**

Client ID: Run ID: **BTEX1_120726C** SeqNo: **2877474** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.56	1.0	20	0	103	75-126	0			
Toluene	20.26	1.0	20	0	101	75-125	0			
Ethylbenzene	20.15	1.0	20	0	101	75-125	0			
Xylenes, Total	59.56	3.0	60	0	99.3	75-125	0			
Surr: 4-Bromofluorobenzene	*30.56*	1.0	*30*	0	*102*	*75-129*	0			
Surr: Trifluorotoluene	*30.82*	1.0	*30*	0	*103*	*75-130*	0			

LCSD Sample ID: **BLCSDW2-120726-R131986** Units: **µg/L** Analysis Date: **7/26/2012 11:32 PM**

Client ID: Run ID: **BTEX1_120726C** SeqNo: **2877475** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.55	1.0	20	0	108	75-126	20.56	4.75	20	
Toluene	21.37	1.0	20	0	107	75-125	20.26	5.31	20	
Ethylbenzene	21.27	1.0	20	0	106	75-125	20.15	5.44	20	
Xylenes, Total	62.44	3.0	60	0	104	75-125	59.56	4.72	20	
Surr: 4-Bromofluorobenzene	*30.24*	1.0	*30*	0	*101*	*75-129*	30.56	*1.06*	*20*	
Surr: Trifluorotoluene	*30.44*	1.0	*30*	0	*101*	*75-130*	30.82	*1.26*	*20*	

MS Sample ID: **1207988-07AMS** Units: **µg/L** Analysis Date: **7/27/2012 01:36 AM**

Client ID: Run ID: **BTEX1_120726C** SeqNo: **2877478** Prep Date: DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	11260	50	1000	9909	135	75-126	0			SEO
Toluene	6949	50	1000	5788	116	75-125	0			O
Ethylbenzene	1287	50	1000	140.6	115	75-125	0			
Xylenes, Total	5158	150	3000	2272	96.2	75-125	0			
Surr: 4-Bromofluorobenzene	*1560*	50	*1500*	0	*104*	*75-129*	0			
Surr: Trifluorotoluene	*1828*	50	*1500*	0	*122*	*75-130*	0			

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

Client: ERM Southwest, Inc.
Work Order: 12071085
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R131986** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **1207988-07AMSD** Units: **µg/L** Analysis Date: **7/27/2012 01:54 AM**

Client ID: Run ID: **BTEX1_120726C** SeqNo: **2877479** Prep Date: DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	11200	50	1000	9909	129	77-126	11260	0.579	20	SEO
Toluene	6942	50	1000	5788	115	75-125	6949	0.103	20	O
Ethylbenzene	1302	50	1000	140.6	116	76-125	1287	1.17	20	
Xylenes, Total	5170	150	3000	2272	96.6	75-125	5158	0.222	20	
Surr: 4-Bromofluorobenzene	*1574*	50	*1500*	0	*105*	*75-129*	1560	*0.949*	*20*	
Surr: Trifluorotoluene	*1813*	50	*1500*	0	*121*	*75-130*	1828	*0.822*	*20*	

The following samples were analyzed in this batch: 12071085-04A 12071085-05A

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

Client: ERM Southwest, Inc.
Work Order: 12071085
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R132012** Instrument ID **BTEX1** Method: **SW8021B**

MBLK Sample ID: **BBLKW2-120727-R132012** Units: **µg/L** Analysis Date: **7/27/2012 12:16 PM**
Client ID: Run ID: **BTEX1_120727B** SeqNo: **2878057** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	*30.67*	1.0	*30*	0	*102*	*75-129*	0			
Surr: Trifluorotoluene	*30.48*	1.0	*30*	0	*102*	*75-130*	0			

LCS Sample ID: **BLCSW2-120727-R132012** Units: **µg/L** Analysis Date: **7/27/2012 11:40 AM**
Client ID: Run ID: **BTEX1_120727B** SeqNo: **2878055** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.16	1.0	20	0	95.8	75-126	0			
Toluene	19.01	1.0	20	0	95.1	75-125	0			
Ethylbenzene	19.14	1.0	20	0	95.7	75-125	0			
Xylenes, Total	56.06	3.0	60	0	93.4	75-125	0			
Surr: 4-Bromofluorobenzene	*31.52*	1.0	*30*	0	*105*	*75-129*	0			
Surr: Trifluorotoluene	*31.3*	1.0	*30*	0	*104*	*75-130*	0			

LCSD Sample ID: **BLCSDW2-120727-R132012** Units: **µg/L** Analysis Date: **7/27/2012 11:58 AM**
Client ID: Run ID: **BTEX1_120727B** SeqNo: **2878056** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.41	1.0	20	0	102	75-126	19.16	6.35	20	
Toluene	20.18	1.0	20	0	101	75-125	19.01	5.96	20	
Ethylbenzene	20.23	1.0	20	0	101	75-125	19.14	5.53	20	
Xylenes, Total	59.89	3.0	60	0	99.8	75-125	56.06	6.6	20	
Surr: 4-Bromofluorobenzene	*30.57*	1.0	*30*	0	*102*	*75-129*	31.52	*3.07*	*20*	
Surr: Trifluorotoluene	*30.36*	1.0	*30*	0	*101*	*75-130*	31.3	*3.07*	*20*	

MS Sample ID: **12071085-01AMS** Units: **µg/L** Analysis Date: **7/27/2012 02:03 PM**
Client ID: **MW-5** Run ID: **BTEX1_120727B** SeqNo: **2878062** Prep Date: DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	524.6	5.0	100	401.1	123	75-126	0			O
Toluene	123.9	5.0	100	2.272	122	75-125	0			
Ethylbenzene	122.8	5.0	100	1.413	121	75-125	0			
Xylenes, Total	384.4	15	300	25.86	120	75-125	0			
Surr: 4-Bromofluorobenzene	*153.5*	5.0	*150*	0	*102*	*75-129*	0			
Surr: Trifluorotoluene	*167.9*	5.0	*150*	0	*112*	*75-130*	0			

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

Client: ERM Southwest, Inc.
Work Order: 12071085
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R132012** Instrument ID **BTEX1** Method: **SW8021B**

MSD Sample ID: **12071085-01AMSD** Units: **µg/L** Analysis Date: **7/27/2012 02:20 PM**

Client ID: **MW-5** Run ID: **BTEX1_120727B** SeqNo: **2878063** Prep Date: DF: **5**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	527.2	5.0	100	401.1	126	77-126	524.6	0.489	20	SO
Toluene	114.9	5.0	100	2.272	113	75-125	123.9	7.58	20	
Ethylbenzene	113.9	5.0	100	1.413	112	76-125	122.8	7.51	20	
Xylenes, Total	356.4	15	300	25.86	110	75-125	384.4	7.55	20	
Surr: 4-Bromofluorobenzene	*160.5*	5.0	*150*	0	*107*	*75-129*	153.5	*4.46*	*20*	
Surr: Trifluorotoluene	*162.6*	5.0	*150*	0	*108*	*75-130*	167.9	*3.22*	*20*	

The following samples were analyzed in this batch: 12071085-01A 12071085-02A 12071085-03A

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

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
WorkOrder: **12071085**

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

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 Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name: **ERMSW-AUST** Date/Time Received: **24-Jul-12 09:30**

Work Order: **12071085** Received by: **PMG**

Checklist completed by Rishel D. Naran eSignature 24-Jul-12 Date Reviewed by: Patricia L. Lynch eSignature 25-Jul-12 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):	3.1C U/C	003	
Cooler(s)/Kit(s):	2616		
Date/Time sample(s) sent to storage:	7/24/12 15:07		
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: Regarding:

Comments:

CorrectiveAction:

SRC Page 1 of 1

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
leston, WV 3168
5280

Chain of Custody F

Page 1 of 1

COC ID: 67246

12071085

ERMSW-AUST: ERM Southwest, Inc.

Project: Huntsman Brickland Refinery

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Huntsman - Brickland	A	BTEX
Work Order		Project Number	0181236	B	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
Send Report To	Jennifer Warfield/Natalie Pickett	Invoice Attn	Jennifer Warfield	D	
Address	206 E. 9th Street Suite 1700	Address	206 E. 9th Street Suite 1700	E F	
City/State/Zip	Austin, TX 78701	City/State/Zip	Austin, TX 78701	G	
Phone	(512) 459-4700	Phone	(512) 459-4700	H	
Fax	(512) 459-4711	Fax	(512) 459-4711	I	
e-Mail Address	Jennifer.Warfield/Natalie.Pickett@erm.	e-Mail Address	Jennifer.Warfield/Natalie.Pickett@erm.	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MW-5	7/20/12	1415	Water	1,8	3	X										☐
2	MW-8	7/20/12	1520	Water	1,8	3	X										☐
3	MW-10	7/20/12	1700	Water	1,8	3	X										☐
4	FB-1	7/20/12	1445 1330	Water	1,8	3	X										☐
5	~~FB~~ TB-1	"		Water	1,8	2	X										☐
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: RANDOLPH ARTEAGA

Shipment Method: FEDEX GROUND

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

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: 10 Day TAT
Randolph Arteaga	7/23/12	1400		
Relinquished by:	Date:	Time:	Received by (Laboratory): 7-24-12. 0930	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp.
2616.	

QC Package: (Check One Box Below)
☐ Level II Std QC ☑ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV 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 completed accurately.

120710 85

From: (915) 497-9452
ERM
ERM
100 Texaco RD

El Paso, TX 79905

Origin ID: ELPA

FedEx Express

J122012071803 25

Ship Date: 23JUL12
ActWgt: 15.0 LB
CAD: 5919001/INET3300

Delivery Address Bar Code

Ref # 0151893
Invoice #
PO #
Dept #

SHIP TO: (281) 530-5656

BILL SENDER

Pat Lynch
ALS Laboratory Group
10450 STANCLIFF RD
STE 210
HOUSTON, TX 77099

TUE - 24 JUL A2
PRIORITY OVERNIGHT

TRK# 7986 5104 8331
0201

XH SGRA

77099
TX-US
IAH

515G1/E052/AA44

After printing this label:
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2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
/templates/components/dotcom_label_contents/TnCDom/us/en/TC_dom.html loading...

ALS Environmental
10450 Stanc[illegible] Suite 210
Hous[illegible] 77099
Tel: +1 2[illegible]6
Fax: +1 281 530 5887

2616

Date:
Name:
Co:

CUSTODY SEAL

7/23/12 Time: 1400
RAMIRO J. CRISTIANI
Company: ERM

Seal Broken By:

Date: 7.24.12

ALS Environmental

26-Dec-2012

Jennifer Warfield
ERM Southwest, Inc.
206 E. 9th Street
Suite 1700
Austin, TX 78701

Tel: (512) 374-2224
Fax: (512) 459-4711

Re: Huntsman Brickland Refinery Work Order: **1212544**

Dear Jennifer,

ALS Environmental received 22 samples on 15-Dec-2012 09:30 AM for the analyses 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.

The total number of pages in this report is 44.

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

Sincerely,

Patricia L. Lynch

Electronically approved by: Luke F. Hernandez

Patricia L. Lynch
Project Manager

Certificate No: TX: T104704231-12-10

ALS Environmental **Date:** *26-Dec-12*

Client:	ERM Southwest, Inc.
Project:	Huntsman Brickland Refinery
Work Order:	1212544

TRRP Laboratory Data Package Cover Page

This data package consists of all or some of the following as applicable:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 Sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC Chapter 5,
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c)The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits.

R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 Other problems or anomalies.
The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Client:	ERM Southwest, Inc.	**TRRP Laboratory Data Package Cover Page**
Project:	Huntsman Brickland Refinery	
Work Order:	1212544	

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory have been identified by the laboratory in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: [NA] This laboratory meets an exception under 30 TAC §25.6 and was last inspected by [ ] TCEQ or [ ] _____ on (enter date of last inspection). Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Patricia L. Lynch

Patricia L. Lynch
Project Manager

Laboratory Review Checklist: Reportable Data								
Laboratory Name: ALS Laboratory Group			LRC Date: 12/26/2012					
Project Name: Huntsman Brickland Refinery			Laboratory Job Number: 1212544					
Reviewer Name: Bernadette Fini			Prep Batch Number(s): R140166, R140260, R140387					
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]	
R1	OI	**Chain-of-custody (C-O-C)**						
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X					
		Were all departures from standard conditions described in an exception report?	X					
R2	OI	**Sample and quality control (QC) identification**						
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
R3	OI	**Test reports**						
		Were all samples prepared and analyzed within holding times?	X					
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X					
		Were calculations checked by a peer or supervisor?	X					
		Were all analyte identifications checked by a peer or supervisor?	X					
		Were sample detection limits reported for all analytes not detected?	X					
		Were all results for soil and sediment samples reported on a dry weight basis?			X			
		Were % moisture (or solids) reported for all soil and sediment samples?			X			
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW-846 Method 5035?			X			
		If required for the project, TICs reported?			X			
R4	O	**Surrogate recovery data**						
		Were surrogates added prior to extraction?	X					
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X					
R5	OI	**Test reports/summary forms for blank samples**						
		Were appropriate type(s) of blanks analyzed?	X					
		Were blanks analyzed at the appropriate frequency?	X					
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		Were blank concentrations < MQL?	X					
R6	OI	**Laboratory control samples (LCS):**						
		Were all COCs included in the LCS?	X					
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X					
		Were LCSs analyzed at the required frequency?	X					
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X					
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X					
		Was the LCSD RPD within QC limits?	X					
R7	OI	**Matrix spike (MS) and matrix spike duplicate (MSD) data**						
		Were the project/method specified analytes included in the MS and MSD?	X					
		Were MS/MSD analyzed at the appropriate frequency?	X					
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1	
		Were MS/MSD RPDs within laboratory QC limits?	X					
R8	OI	**Analytical duplicate data**						
		Were appropriate analytical duplicates analyzed for each matrix?			X			
		Were analytical duplicates analyzed at the appropriate frequency?			X			
		Were RPDs or relative standard deviations within the laboratory QC limits?			X			
R9	OI	**Method quantitation limits (MQLs):**						
		Are the MQLs for each method analyte included in the laboratory data package?	X					
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X					
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X					
R10	OI	**Other problems/anomalies**						
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X					
		Were all necessary corrective actions performed for the reported data?	X					
		Was applicable and available technology used to lower the SDL and minimize the matrix interference affects on the sample results?	X					
		Is the laboratory NELAC-accredited under the Texas Laboratory Program for the analytes, matrices and methods associated with this laboratory data package?	X					

Laboratory Review Checklist: Reportable Data							
Laboratory Name: ALS Laboratory Group			LRC Date: 12/26/2012				
Project Name: Huntsman Brickland Refinery			Laboratory Job Number: 1212544				
Reviewer Name: Bernadette Fini			Prep Batch Number(s): R140166, R140260, R140387				
#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial calibration (ICAL)**					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	**Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB)**					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
S3	O	**Mass spectral tuning:**					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	**Internal standards (IS):**					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	**Raw data** (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	**Dual column confirmation**					
		Did dual column confirmation results meet the method-required QC?		X			2
S7	O	**Tentatively identified compounds (TICs):**					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	**Interference Check Sample (ICS) results:**					
		Were percent recoveries within method QC limits?			X		
S9	I	**Serial dilutions, post digestion spikes, and method of standard additions**					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	**Method detection limit (MDL) studies**					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	**Proficiency test reports:**					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	**Standards documentation**					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	**Compound/analyte identification procedures**					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	**Demonstration of analyst competency (DOC)**					
		Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	**Verification/validation documentation for methods** (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	**Laboratory standard operating procedures (SOPs):**					
		Are laboratory SOPs current and on file for each method performed?	X				

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Reportable Data		
Laboratory Name: ALS Laboratory Group		LRC Date: 12/26/2012
Project Name: Huntsman Brickland Refinery		Laboratory Job Number: 1212544
Reviewer Name: Bernadette Fini		Prep Batch Number(s): R140166, R140260, R140387
ER#[5]	**Description**	
1	Batch R140260, BTEX Method 8021, Sample MW-8 : MS/MSD recoveries were above the control limits for Benzene. Results are flagged with an O. The associated LCS recoveries and MS/MSD RPD were within the control limits.	
2	BTEX Method 8021 results are P qualified for Xylenes, Total in Sample MW-10. This indicates possible coelution or matrix interference on the confirming column. The lower of the two results is reported as required by the method. BTEX Method 8021 results are P qualified for Ethylbenzene in Sample DUP-1. This indicates possible coelution or matrix interference on the confirming column. The lower of the two results is reported as required by the method.	

Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
O = Organic Analyses; I = Inorganic Analyses (and general chemistry, when applicable);
NA = Not Applicable;
NR = Not Reviewed;
R# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Work Order: **1212544**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1212544-01	RIVER - UPSTREAM	Water		12/11/2012 15:30	12/15/2012 09:30	☐
1212544-02	RIVER - DOWNSTREAM	Water		12/11/2012 16:30	12/15/2012 09:30	☐
1212544-03	MW-3D	Water		12/11/2012 14:45	12/15/2012 09:30	☐
1212544-04	MW-3S	Water		12/11/2012 16:30	12/15/2012 09:30	☐
1212544-05	MW-4	Water		12/13/2012 11:53	12/15/2012 09:30	☐
1212544-06	MW-5	Water		12/13/2012 14:00	12/15/2012 09:30	☐
1212544-07	MW-6D	Water		12/12/2012 13:35	12/15/2012 09:30	☐
1212544-08	MW-6S	Water		12/12/2012 16:50	12/15/2012 09:30	☐
1212544-09	MW-7	Water		12/12/2012 12:25	12/15/2012 09:30	☐
1212544-10	MW-8	Water		12/13/2012 15:15	12/15/2012 09:30	☐
1212544-11	MW-9S	Water		12/12/2012 10:25	12/15/2012 09:30	☐
1212544-12	MW-10	Water		12/13/2012 17:10	12/15/2012 09:30	☐
1212544-13	MW-14	Water		12/13/2012 10:40	12/15/2012 09:30	☐
1212544-14	MW-15	Water		12/12/2012 16:35	12/15/2012 09:30	☐
1212544-15	EB-1	Water		12/11/2012 15:15	12/15/2012 09:30	☐
1212544-16	FB-1	Water		12/11/2012 13:45	12/15/2012 09:30	☐
1212544-17	EB-2	Water		12/13/2012 12:15	12/15/2012 09:30	☐
1212544-18	DUP-1	Water		12/12/2012 12:28	12/15/2012 09:30	☐
1212544-19	FB-2	Water		12/12/2012 11:15	12/15/2012 09:30	☐
1212544-20	FB-3	Water		12/13/2012 10:00	12/15/2012 09:30	☐
1212544-21	TBLK-1	Water		12/14/2012	12/15/2012 09:30	☐
1212544-22	TBLK-2	Water		12/14/2012	12/15/2012 09:30	☐

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: RIVER - UPSTREAM
Collection Date: 12/11/2012 03:30 PM

Work Order: 1212544
Lab ID: 1212544-01
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 11:40
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 11:40
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 11:40
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 11:40
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	12/21/2012 11:40
Surr: Trifluorotoluene	*104*			*75-130*	*%REC*	1	12/21/2012 11:40

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: RIVER - DOWNSTREAM
Collection Date: 12/11/2012 04:30 PM

Work Order: 1212544
Lab ID: 1212544-02
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 11:58
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 11:58
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 11:58
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 11:58
Surr: 4-Bromofluorobenzene	*102*			*75-129*	*%REC*	1	12/21/2012 11:58
Surr: Trifluorotoluene	*105*			*75-130*	*%REC*	1	12/21/2012 11:58

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-3D
Collection Date: 12/11/2012 02:45 PM

Work Order: 1212544
Lab ID: 1212544-03
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:17
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:17
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:17
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 12:17
Surr: 4-Bromofluorobenzene	*102*			*75-129*	*%REC*	1	12/21/2012 12:17
Surr: Trifluorotoluene	*106*			*75-130*	*%REC*	1	12/21/2012 12:17

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-3S
Collection Date: 12/11/2012 04:30 PM

Work Order: 1212544
Lab ID: 1212544-04
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:36
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:36
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:36
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 12:36
Surr: 4-Bromofluorobenzene	*102*			*75-129*	*%REC*	1	12/21/2012 12:36
Surr: Trifluorotoluene	*108*			*75-130*	*%REC*	1	12/21/2012 12:36

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-4
Collection Date: 12/13/2012 11:53 AM

Work Order: 1212544
Lab ID: 1212544-05
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B			Method: **SW8021B**				Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:54
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:54
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 12:54
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 12:54
Surr: 4-Bromofluorobenzene	*106*			*75-129*	*%REC*	1	12/21/2012 12:54
Surr: Trifluorotoluene	*109*			*75-130*	*%REC*	1	12/21/2012 12:54

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-5
Collection Date: 12/13/2012 02:00 PM

Work Order: 1212544
Lab ID: 1212544-06
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	**1.1**		**0.0010**	**0.0050**	**mg/L**	5	12/21/2012 13:13
Toluene	U		0.0010	0.0050	mg/L	5	12/21/2012 13:13
Ethylbenzene	U		0.0010	0.0050	mg/L	5	12/21/2012 13:13
Xylenes, Total	**0.018**		**0.0035**	**0.015**	**mg/L**	5	12/21/2012 13:13
Surr: 4-Bromofluorobenzene	*96.0*			*75-129*	*%REC*	5	12/21/2012 13:13
Surr: Trifluorotoluene	*106*			*75-130*	*%REC*	5	12/21/2012 13:13

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-6D
Collection Date: 12/12/2012 01:35 PM

Work Order: 1212544
Lab ID: 1212544-07
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:00
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:00
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:00
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 14:00
Surr: 4-Bromofluorobenzene	*104*			*75-129*	*%REC*	1	12/21/2012 14:00
Surr: Trifluorotoluene	*114*			*75-130*	*%REC*	1	12/21/2012 14:00

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-6S
Collection Date: 12/12/2012 04:50 PM

Work Order: 1212544
Lab ID: 1212544-08
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:19
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:19
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:19
Xylenes, Total	**0.0014**	J	**0.00070**	**0.0030**	**mg/L**	1	12/21/2012 14:19
Surr: 4-Bromofluorobenzene	*104*			*75-129*	*%REC*	1	12/21/2012 14:19
Surr: Trifluorotoluene	*108*			*75-130*	*%REC*	1	12/21/2012 14:19

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-7
Collection Date: 12/12/2012 12:25 PM

Work Order: 1212544
Lab ID: 1212544-09
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:37
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:37
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 14:37
Xylenes, Total	**0.00082**	J	**0.00070**	**0.0030**	**mg/L**	1	12/21/2012 14:37
Surr: 4-Bromofluorobenzene	*102*			*75-129*	*%REC*	1	12/21/2012 14:37
Surr: Trifluorotoluene	*115*			*75-130*	*%REC*	1	12/21/2012 14:37

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-8
Collection Date: 12/13/2012 03:15 PM

Work Order: 1212544
Lab ID: 1212544-10
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	**5.5**		**0.0050**	**0.025**	**mg/L**	25	12/21/2012 14:56
Toluene	U		0.0050	0.025	mg/L	25	12/21/2012 14:56
Ethylbenzene	U		0.0050	0.025	mg/L	25	12/21/2012 14:56
Xylenes, Total	U		0.018	0.075	mg/L	25	12/21/2012 14:56
Surr: 4-Bromofluorobenzene	*104*			*75-129*	*%REC*	25	12/21/2012 14:56
Surr: Trifluorotoluene	*113*			*75-130*	*%REC*	25	12/21/2012 14:56

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-9S
Collection Date: 12/12/2012 10:25 AM

Work Order: 1212544
Lab ID: 1212544-11
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 15:51
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 15:51
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 15:51
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 15:51
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	12/21/2012 15:51
Surr: Trifluorotoluene	*108*			*75-130*	*%REC*	1	12/21/2012 15:51

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-10
Collection Date: 12/13/2012 05:10 PM

Work Order: 1212544
Lab ID: 1212544-12
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	**0.015**		**0.00020**	**0.0010**	**mg/L**	1	12/21/2012 16:10
Toluene	**0.00088**	J	**0.00020**	**0.0010**	**mg/L**	1	12/21/2012 16:10
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 16:10
Xylenes, Total	**0.0060**	P	**0.00070**	**0.0030**	**mg/L**	1	12/21/2012 16:10
Surr: 4-Bromofluorobenzene	*116*			*75-129*	*%REC*	1	12/21/2012 16:10
Surr: Trifluorotoluene	*114*			*75-130*	*%REC*	1	12/21/2012 16:10

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-14
Collection Date: 12/13/2012 10:40 AM

Work Order: 1212544
Lab ID: 1212544-13
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 16:28
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 16:28
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 16:28
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 16:28
Surr: 4-Bromofluorobenzene	*100*			*75-129*	*%REC*	1	12/21/2012 16:28
Surr: Trifluorotoluene	*106*			*75-130*	*%REC*	1	12/21/2012 16:28

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: MW-15
Collection Date: 12/12/2012 04:35 PM

Work Order: 1212544
Lab ID: 1212544-14
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 16:47
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 16:47
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 16:47
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 16:47
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	12/21/2012 16:47
Surr: Trifluorotoluene	*106*			*75-130*	*%REC*	1	12/21/2012 16:47

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: EB-1
Collection Date: 12/11/2012 03:15 PM

Work Order: 1212544
Lab ID: 1212544-15
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 17:32
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 17:32
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 17:32
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 17:32
Surr: 4-Bromofluorobenzene	*106*			*75-129*	*%REC*	1	12/21/2012 17:32
Surr: Trifluorotoluene	*114*			*75-130*	*%REC*	1	12/21/2012 17:32

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: FB-1
Collection Date: 12/11/2012 01:45 PM

Work Order: 1212544
Lab ID: 1212544-16
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 17:51
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 17:51
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 17:51
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 17:51
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	12/21/2012 17:51
Surr: Trifluorotoluene	*104*			*75-130*	*%REC*	1	12/21/2012 17:51

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: EB-2
Collection Date: 12/13/2012 12:15 PM

Work Order: 1212544
Lab ID: 1212544-17
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 18:09
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 18:09
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 18:09
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 18:09
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	12/21/2012 18:09
Surr: Trifluorotoluene	*107*			*75-130*	*%REC*	1	12/21/2012 18:09

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: DUP-1
Collection Date: 12/12/2012 12:28 PM

Work Order: 1212544
Lab ID: 1212544-18
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	**0.91**		**0.010**	**0.050**	**mg/L**	50	12/26/2012 14:08
Toluene	**0.0027**		**0.00020**	**0.0010**	**mg/L**	1	12/21/2012 18:28
Ethylbenzene	**0.00096**	JP	**0.00020**	**0.0010**	**mg/L**	1	12/21/2012 18:28
Xylenes, Total	**0.016**		**0.00070**	**0.0030**	**mg/L**	1	12/21/2012 18:28
Surr: 4-Bromofluorobenzene	*115*			*75-129*	*%REC*	1	12/21/2012 18:28
Surr: 4-Bromofluorobenzene	*104*			*75-129*	*%REC*	50	12/26/2012 14:08
Surr: Trifluorotoluene	*109*			*75-130*	*%REC*	1	12/21/2012 18:28
Surr: Trifluorotoluene	*101*			*75-130*	*%REC*	50	12/26/2012 14:08

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: FB-2
Collection Date: 12/12/2012 11:15 AM

Work Order: 1212544
Lab ID: 1212544-19
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/26/2012 15:04
Toluene	U		0.00020	0.0010	mg/L	1	12/26/2012 15:04
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/26/2012 15:04
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/26/2012 15:04
Surr: 4-Bromofluorobenzene	*101*			*75-129*	*%REC*	1	12/26/2012 15:04
Surr: Trifluorotoluene	*102*			*75-130*	*%REC*	1	12/26/2012 15:04

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: FB-3
Collection Date: 12/13/2012 10:00 AM

Work Order: 1212544
Lab ID: 1212544-20
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/21/2012 19:05
Toluene	U		0.00020	0.0010	mg/L	1	12/21/2012 19:05
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/21/2012 19:05
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/21/2012 19:05
Surr: 4-Bromofluorobenzene	*102*			*75-129*	*%REC*	1	12/21/2012 19:05
Surr: Trifluorotoluene	*106*			*75-130*	*%REC*	1	12/21/2012 19:05

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: TBLK-1
Collection Date: 12/14/2012

Work Order: 1212544
Lab ID: 1212544-21
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/20/2012 05:27
Toluene	U		0.00020	0.0010	mg/L	1	12/20/2012 05:27
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/20/2012 05:27
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/20/2012 05:27
Surr: 4-Bromofluorobenzene	*98.2*			*75-129*	*%REC*	1	12/20/2012 05:27
Surr: Trifluorotoluene	*103*			*75-130*	*%REC*	1	12/20/2012 05:27

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

ALS Environmental

Date: *26-Dec-12*

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
Sample ID: TBLK-2
Collection Date: 12/14/2012

Work Order: 1212544
Lab ID: 1212544-22
Matrix: WATER

Analyses	Result	Qual	SDL	MQL	Units	Dilution Factor	Date Analyzed
BTEX BY SW8021B		Method: **SW8021B**					Analyst: **SMA**
Benzene	U		0.00020	0.0010	mg/L	1	12/20/2012 05:45
Toluene	U		0.00020	0.0010	mg/L	1	12/20/2012 05:45
Ethylbenzene	U		0.00020	0.0010	mg/L	1	12/20/2012 05:45
Xylenes, Total	U		0.00070	0.0030	mg/L	1	12/20/2012 05:45
Surr: 4-Bromofluorobenzene	*99.1*			*75-129*	*%REC*	1	12/20/2012 05:45
Surr: Trifluorotoluene	*105*			*75-130*	*%REC*	1	12/20/2012 05:45

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

ALS Environmental

Date: 26-Dec-12

WorkOrder: 1212544
InstrumentID: BTEX3
Test Code: BTEX_W
Test Number: SW8021B
Test Name: BTEX by SW8021B

METHOD DETECTION / REPORTING LIMITS

Matrix: Aqueous **Units:** mg/L

Type	Analyte	CAS	DCS	MDL	Unadjusted MQL
A	Benzene	71-43-2	0.00068	0.00020	0.0010
A	Ethylbenzene	100-41-4	0.00066	0.00020	0.0010
A	Toluene	108-88-3	0.00057	0.00020	0.0010
M	Xylenes, Total	1330-20-7	0.0019	0.00070	0.0030
S	Surr: 4-Bromofluorobenzene	460-00-4	0	0.00020	0.0010
S	Surr: Trifluorotoluene	98-08-8	0	0.00020	0.0010

Batch ID: **R140166** Instrument ID **BTEX3** Method: **SW8021B**

MBLK Sample ID: **BBLKW2-121219-R140166** Units: **µg/L** Analysis Date: **12/19/2012 10:40 PM**

Client ID: Run ID: **BTEX3_121219C** SeqNo: **3060925** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	28.22	1.0	*30*	0	*94.1*	*75-129*	0			
Surr: Trifluorotoluene	29.39	1.0	*30*	0	*98*	*75-130*	0			

LCS Sample ID: **BLCSW2-121219-R140166** Units: **µg/L** Analysis Date: **12/19/2012 10:03 PM**

Client ID: Run ID: **BTEX3_121219C** SeqNo: **3060920** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.01	1.0	20	0	95	75-126	0			
Toluene	19.2	1.0	20	0	96	75-125	0			
Ethylbenzene	18.99	1.0	20	0	95	75-125	0			
Xylenes, Total	59.32	3.0	60	0	98.9	75-125	0			
Surr: 4-Bromofluorobenzene	29.69	1.0	*30*	0	*99*	*75-129*	0			
Surr: Trifluorotoluene	31.08	1.0	*30*	0	*104*	*75-130*	0			

LCSD Sample ID: **BLCSDW2-121219-R140166** Units: **µg/L** Analysis Date: **12/19/2012 10:21 PM**

Client ID: Run ID: **BTEX3_121219C** SeqNo: **3060922** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.51	1.0	20	0	103	75-126	19.01	7.59	20	
Toluene	20.76	1.0	20	0	104	75-125	19.2	7.82	20	
Ethylbenzene	20.56	1.0	20	0	103	75-125	18.99	7.91	20	
Xylenes, Total	64.05	3.0	60	0	107	75-125	59.32	7.68	20	
Surr: 4-Bromofluorobenzene	29.86	1.0	*30*	0	*99.5*	*75-129*	29.69	*0.558*	*20*	
Surr: Trifluorotoluene	30.93	1.0	*30*	0	*103*	*75-130*	31.08	*0.459*	*20*	

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

Client: ERM Southwest, Inc.
Work Order: 1212544
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R140166** Instrument ID **BTEX3** Method: **SW8021B**

MS Sample ID: **1212500-14AMS** Units: **µg/L** Analysis Date: **12/20/2012 04:12 AM**
Client ID: Run ID: **BTEX3_121219C** SeqNo: **3060954** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.91	1.0	20	3.211	98.5	75-126	0			
Toluene	21.13	1.0	20	0	106	75-125	0			
Ethylbenzene	29.85	1.0	20	10.42	97.2	75-125	0			
Xylenes, Total	157.7	3.0	60	100.7	95	75-125	0			
Surr: 4-Bromofluorobenzene	33.26	1.0	*30*	0	*111*	*75-129*	0			
Surr: Trifluorotoluene	32.24	1.0	*30*	0	*107*	*75-130*	0			

MSD Sample ID: **1212500-14AMSD** Units: **µg/L** Analysis Date: **12/20/2012 04:31 AM**
Client ID: Run ID: **BTEX3_121219C** SeqNo: **3060957** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	23.08	1.0	20	3.211	99.3	77-126	22.91	0.756	20	
Toluene	21.35	1.0	20	0	107	75-125	21.13	1.05	20	
Ethylbenzene	30.18	1.0	20	10.42	98.8	76-125	29.85	1.1	20	
Xylenes, Total	159.9	3.0	60	100.7	98.6	75-125	157.7	1.36	20	
Surr: 4-Bromofluorobenzene	33.56	1.0	*30*	0	*112*	*75-129*	33.26	*0.889*	*20*	
Surr: Trifluorotoluene	32.51	1.0	*30*	0	*108*	*75-130*	32.24	*0.841*	*20*	

The following samples were analyzed in this batch: 1212544-21A 1212544-22A

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

Client: ERM Southwest, Inc.
Work Order: 1212544
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R140260** Instrument ID **BTEX3** Method: **SW8021B**

MBLK Sample ID: **BBLKW1-121221-R140260** Units: **µg/L** Analysis Date: **12/21/2012 11:03 AM**
Client ID: Run ID: **BTEX3_121221A** SeqNo: **3063224** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	29.48	1.0	*30*	0	*98.3*	*75-129*	0			
Surr: Trifluorotoluene	31	1.0	*30*	0	*103*	*75-130*	0			

LCS Sample ID: **BLCSW1-121221-R140260** Units: **µg/L** Analysis Date: **12/21/2012 10:26 AM**
Client ID: Run ID: **BTEX3_121221A** SeqNo: **3063222** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	20.57	1.0	20	0	103	75-126	0			
Toluene	20.84	1.0	20	0	104	75-125	0			
Ethylbenzene	20.71	1.0	20	0	104	75-125	0			
Xylenes, Total	64.65	3.0	60	0	108	75-125	0			
Surr: 4-Bromofluorobenzene	30.28	1.0	*30*	0	*101*	*75-129*	0			
Surr: Trifluorotoluene	31.31	1.0	*30*	0	*104*	*75-130*	0			

LCSD Sample ID: **BLCSDW1-121221-R140260** Units: **µg/L** Analysis Date: **12/21/2012 10:44 AM**
Client ID: Run ID: **BTEX3_121221A** SeqNo: **3063223** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.41	1.0	20	0	107	75-126	20.57	3.98	20	
Toluene	21.78	1.0	20	0	109	75-125	20.84	4.41	20	
Ethylbenzene	21.62	1.0	20	0	108	75-125	20.71	4.32	20	
Xylenes, Total	67.6	3.0	60	0	113	75-125	64.65	4.46	20	
Surr: 4-Bromofluorobenzene	30.26	1.0	*30*	0	*101*	*75-129*	30.28	*0.0817*	*20*	
Surr: Trifluorotoluene	31.67	1.0	*30*	0	*106*	*75-130*	31.31	*1.15*	*20*	

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

Client: ERM Southwest, Inc.
Work Order: 1212544
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R140260** Instrument ID **BTEX3** Method: **SW8021B**

MS Sample ID: **1212544-10AMS** Units: **µg/L** Analysis Date: **12/21/2012 03:14 PM**
Client ID: **MW-8** Run ID: **BTEX3_121221A** SeqNo: **3063663** Prep Date: DF: **25**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	5603	25	500	5458	29	75-126	0			SEO
Toluene	528.7	25	500	0	106	75-125	0			
Ethylbenzene	531.4	25	500	0	106	75-125	0			
Xylenes, Total	1617	75	1500	0	108	75-125	0			
Surr: 4-Bromofluorobenzene	764.1	25	*750*	0	*102*	*75-129*	0			
Surr: Trifluorotoluene	837.4	25	*750*	0	*112*	*75-130*	0			

MSD Sample ID: **1212544-10AMSD** Units: **µg/L** Analysis Date: **12/21/2012 03:33 PM**
Client ID: **MW-8** Run ID: **BTEX3_121221A** SeqNo: **3063664** Prep Date: DF: **25**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	5354	25	500	5458	-20.7	77-126	5603	4.54	20	SO
Toluene	516.7	25	500	0	103	75-125	528.7	2.3	20	
Ethylbenzene	519.8	25	500	0	104	76-125	531.4	2.21	20	
Xylenes, Total	1575	75	1500	0	105	75-125	1617	2.65	20	
Surr: 4-Bromofluorobenzene	762.1	25	*750*	0	*102*	*75-129*	764.1	*0.27*	*20*	
Surr: Trifluorotoluene	835.3	25	*750*	0	*111*	*75-130*	837.4	*0.25*	*20*	

The following samples were analyzed in this batch:

1212544-01A	1212544-02A	1212544-03A
1212544-04A	1212544-05A	1212544-06A
1212544-07A	1212544-08A	1212544-09A
1212544-10A	1212544-11A	1212544-12A
1212544-13A	1212544-14A	1212544-15A
1212544-16A	1212544-17A	1212544-18A
1212544-20A		

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

Client: ERM Southwest, Inc.
Work Order: 1212544
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R140387** Instrument ID **BTEX3** Method: **SW8021B**

MBLK Sample ID: **BBLKW1-121226-R140387** Units: **µg/L** Analysis Date: **12/26/2012 01:31 PM**
Client ID: Run ID: **BTEX3_121226A** SeqNo: **3066289** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Toluene	U	1.0								
Ethylbenzene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 4-Bromofluorobenzene	31.25	1.0	*30*	0	*104*	*75-129*	0			
Surr: Trifluorotoluene	31.56	1.0	*30*	0	*105*	*75-130*	0			

LCS Sample ID: **BLCSW1-121226-R140387** Units: **µg/L** Analysis Date: **12/26/2012 12:54 PM**
Client ID: Run ID: **BTEX3_121226A** SeqNo: **3066286** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.51	1.0	20	0	97.6	75-126	0			
Toluene	20.13	1.0	20	0	101	75-125	0			
Ethylbenzene	19.98	1.0	20	0	99.9	75-125	0			
Xylenes, Total	62.96	3.0	60	0	105	75-125	0			
Surr: 4-Bromofluorobenzene	32.87	1.0	*30*	0	*110*	*75-129*	0			
Surr: Trifluorotoluene	31.72	1.0	*30*	0	*106*	*75-130*	0			

LCSD Sample ID: **BLCSDW1-121226-R140387** Units: **µg/L** Analysis Date: **12/26/2012 01:13 PM**
Client ID: Run ID: **BTEX3_121226A** SeqNo: **3066287** Prep Date: DF: **1**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.52	1.0	20	0	97.6	75-126	19.51	0.0443	20	
Toluene	20.16	1.0	20	0	101	75-125	20.13	0.111	20	
Ethylbenzene	20.11	1.0	20	0	101	75-125	19.98	0.676	20	
Xylenes, Total	63.26	3.0	60	0	105	75-125	62.96	0.476	20	
Surr: 4-Bromofluorobenzene	32.06	1.0	*30*	0	*107*	*75-129*	32.87	*2.51*	*20*	
Surr: Trifluorotoluene	31.19	1.0	*30*	0	*104*	*75-130*	31.72	*1.68*	*20*	

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

Client: ERM Southwest, Inc.
Work Order: 1212544
Project: Huntsman Brickland Refinery

QC BATCH REPORT

Batch ID: **R140387** Instrument ID **BTEX3** Method: **SW8021B**

MS Sample ID: **1212544-18AMS** Units: **µg/L** Analysis Date: **12/26/2012 02:27 PM**
Client ID: **DUP-1** Run ID: **BTEX3_121226A** SeqNo: **3066292** Prep Date: DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1993	50	1000	907.4	109	75-126	0			
Toluene	1060	50	1000	0	106	75-125	0			
Ethylbenzene	1059	50	1000	0	106	75-125	0			
Xylenes, Total	3335	150	3000	0	111	75-125	0			
Surr: 4-Bromofluorobenzene	1544	50	*1500*	0	*103*	*75-129*	0			
Surr: Trifluorotoluene	1522	50	*1500*	0	*101*	*75-130*	0			

MSD Sample ID: **1212544-18AMSD** Units: **µg/L** Analysis Date: **12/26/2012 02:45 PM**
Client ID: **DUP-1** Run ID: **BTEX3_121226A** SeqNo: **3066293** Prep Date: DF: **50**

Analyte	Result	MQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1961	50	1000	907.4	105	77-126	1993	1.59	20	
Toluene	1016	50	1000	0	102	75-125	1060	4.23	20	
Ethylbenzene	1013	50	1000	0	101	76-125	1059	4.4	20	
Xylenes, Total	3208	150	3000	0	107	75-125	3335	3.89	20	
Surr: 4-Bromofluorobenzene	1545	50	*1500*	0	*103*	*75-129*	1544	*0.0834*	*20*	
Surr: Trifluorotoluene	1537	50	*1500*	0	*102*	*75-130*	1522	*0.987*	*20*	

The following samples were analyzed in this batch: 1212544-18A 1212544-19A

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

Client: ERM Southwest, Inc.
Project: Huntsman Brickland Refinery
WorkOrder: 1212544

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

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 Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
mg/L	Milligrams per Liter

ALS Environmental

Sample Receipt Checklist

Client Name: **ERMSW-AUST** Date/Time Received: **15-Dec-12 09:30**

Work Order: **1212544** Received by: **RDN**

Checklist completed by Johnnie B. Allen (eSignature) 17-Dec-12 (Date) Reviewed by: Patricia L. Lynch (eSignature) 18-Dec-12 (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):	2.1 C,2.7 C/uc	005	
Cooler(s)/Kit(s):	4929/2903		
Date/Time sample(s) sent to storage:	12/17/12 11:35		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: FB-3 collected 12/13/12 @ 10:00 has 2 VOA vials Id'ed as FB-1 collected 12/13/12 @ 10:00 on label. EB-2 collected 12/13/12 @ 12:15 has 1 VOA vial ID'ed as EB-14 collected 12/13/12 @ 12:15 on label

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental

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Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070

Chain of Custody Form

Page 1 of 3

COC ID: 77240

1212544

ERMSW-AUST: ERM Southwest, Inc.

Project: Huntsman Brickland Refinery

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Huntsland Brickyard	A	BTEX (8021)
Work Order		Project Number	0161236.03	B	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
Send Report To	Jennifer Warfield	Invoice Attn	Jennifer Warfield	D	
Address	206 E. 9th Street Suite 1700	Address	206 E. 9th Street Suite 1700	E F	
City/State/Zip	Austin, TX 78701	City/State/Zip	Austin, TX 78701	G	
Phone	(512) 459-4700	Phone	(512) 459-4700	H	
Fax	(512) 459-4711	Fax	(512) 459-4711	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	RIVER - UPSTREAM	12/11/12	15:30	WATER	1,8	3	X										
2	RIVER - DOWNSTREAM	12/11/12	16:30	WATER	1,8	3	X										
3	MW-3D	12/11/12	14:45	WATER	1,8	3	X										
4	MW-3S	12/11/12	16:30	WATER	1,8	3	X										
5	MW-4	12/13/12	11:53	WATER	1,8	3	X										
6	MW-5	12/13/12	14:00	WATER	1,8	3	X										
7	MW-6D	12/12/12	13:35	WATER	1,8	3	X										
8	MW-6S	12/12/12	14:50	WATER	1,8	3	X										
9	MW-7	12/12/12	12:25	WATER	1,8	3	X										
10	MW-8	12/13/12	15:15	WATER	1,8	3	X										

Sampler(s) Please Print & Sign: ANNA P. HOESSLE

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: | Date: 12-14-12 | Time: 12:00 | Received by: PW ALS 12/15/12 09:30

Notes: 10 Day TAT.

Relinquished by: | Date: | Time: | Received by (Laboratory):

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other / EDD
- ☑ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note:
1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Environmental

Chain of Custody Form

COC ID: 77241

ALS Project Manager:		ALS Work Order #:	12125 qq

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsland Brickyard	A	BTEX (8021)
Work Order		Project Number	0161236.03	B	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
Send Report To	Jennifer Warfield	Invoice Attn	Jennifer Warfield	D	
Address	206 E. 9th Street Suite 1700	Address	206 E. 9th Street Suite 1700	E F	
City/State/Zip	Austin, TX 78701	City/State/Zip	Austin, TX 78701	G	
Phone	(512) 459-4700	Phone	(512) 459-4700	H	
Fax	(512) 459-4711	Fax	(512) 459-4711	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-9S	12/12/12	10:25	WATER	1,8	3	X										
2	MW-10	12/13/12	17:10	WATER	1,8	3	X										
3	MW-14	12/13/12	10:40	WATER	1,8	3	X										
4	MW-15	12/12/12	16:35	WATER	1,8	3	X										
5	EB-1	12/11/12	15:15	WATER	1,8	3	X										
6	FB-1	12/11/12	~~16:50~~ 13:45 AM	WATER	1,8	3	X										
7	EB-2	12/13/12	12:15	WATER	1,8	3	X										
8	DUP-1	12/12/12	12:28	WATER	1,8	3	X										
9	FB-2	12/12/12	17:15	WATER	1,8	3	X										
10	FB-3	12/13/12	10:00	WATER	1,8	3	X										

Sampler(s) Please Print & Sign: Anna E. Hoessle

Shipment Method: FEDEX

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

Results Due Date:

Relinquished by: | Date: 12/14/12 | Time: 12:00 | Received by: RW ALS 12/15/12 09:30

Notes: 10 Day TAT.

Relinquished by: | Date: | Time: | Received by (Laboratory):

Logged by (Laboratory): | Date: | Time: | Checked by (Laboratory):

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)
☐ Level II Std QC ☑ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV 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.
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ALS Environmental

Chain of Custody Form

Page 3 of 3

COC ID: 77242

ALS Project Manager:

ALS Work Order #: 1212564

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Huntsland Brickyard	A	BTEX (8021)
Work Order		Project Number	0161236.03	B	
Company Name	ERM Southwest, Inc.	Bill To Company	ERM Southwest, Inc.	C	
Send Report To	Jennifer Warfield	Invoice Attn	Jennifer Warfield	D	
Address	206 E. 9th Street Suite 1700	Address	206 E. 9th Street Suite 1700	E F	
City/State/Zip	Austin, TX 78701	City/State/Zip	Austin, TX 78701	G	
Phone	(512) 459-4700	Phone	(512) 459-4700	H	
Fax	(512) 459-4711	Fax	(512) 459-4711	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 MS	12/13/12	15:15	Water	1,8	3	X										
2	MW-8 MSD	12/13/12	15:15	Water	1,8	3	X										
3	TBLK-1	12/14/12		Water	1,8	2	X										
4	TBLK-2	12/14/12		Water	1,8	2	X										
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Anna P. Hoessle

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: Anna P. Hoessle	Date: 12/14/12	Time: 12:00	Received by: RN	Date/Time: 12/18/12 09:30
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Notes: 10 Day TAT.

Cooler ID	Cooler Temp.

QC Package: (Check One Box Below)

☐ Level II Std QC ☑ TRRP Checklist

☐ Level III Std QC/Raw Data ☐ TRRP Level IV

☐ Level IV 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.
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From: (915) 497-9452 Origin ID: ELPA
ERM
ERM
100 Texaco RD

El Paso, TX 79905

J1220120920032S

Ship Date: 14DEC12
ActWgt: 25.0 LB
CAD: 5919001/INET3300

Delivery Address Bar Code

Ref # 0180774
Invoice #
PO #
Dept #

SHIP TO: (281) 530-5656 BILL SENDER

Pat Lynch
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

2 of 2

SATURDAY ### A1
PRIORITY OVERNIGHT

MPS# 7943 0753 0080
0263

Mstr# 7943 0752 9330 0201

N0 SGRA

77099
TX-US
IAH

515G1/B2B3/AA44

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ERM
ERM
100 Texaco RD

El Paso, TX 79905

J1220120920032S

Ship Date: 14DEC12
ActWgt: 25.0 LB
CAD: 5919001/INET3300

Delivery Address Bar Code

SHIP TO: (281) 530-5656 BILL SENDER

Pat Lynch
ALS Laboratory Group
10450 Stancliff Rd
STE 210
Houston, TX 77099

Ref # 0180774
Invoice #
PO #
Dept #

1 of 2

TRK# 7943 0752 9330
0201

MASTER

SATURDAY ### A1
PRIORITY OVERNIGHT

77099
TX-US
IAH

N0 SGRA

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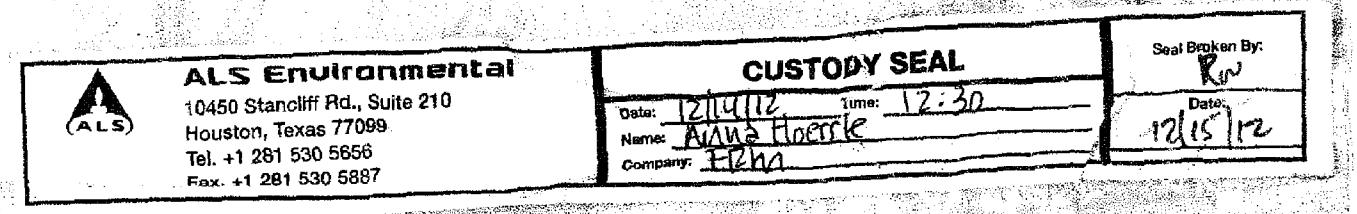
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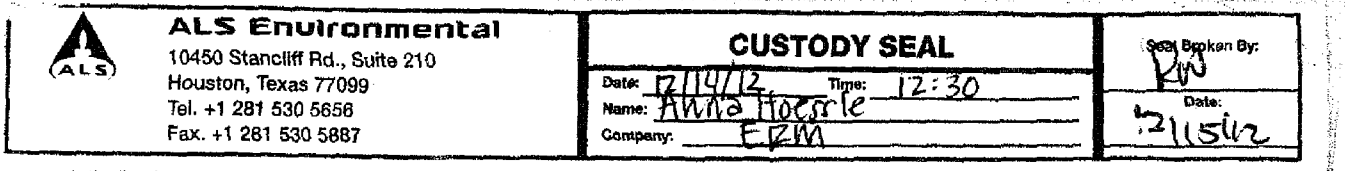
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Date: 12/14/12 Time: 12:30
Name: Anna Hoerrle
Company: ERM
Seal Broken By:
Date: 12/15/12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CUSTODY SEAL
Date: 12/14/12 Time: 12:30
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Company: ERM
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Date: 12/15/12