

1R - 2162

# WORKPLANS

Date:

May 2010

# *Basin Environmental Consulting, LLC*

2800 Plains Highway  
P. O. Box 381  
Lovington, New Mexico 88260  
cjbryant@basin-consulting.com  
Office: (575) 396-2378 Fax: (575) 396-1429



## **REMEDIATION SUMMARY AND PROPOSED SOIL CLOSURE STRATEGY**

**PLAINS PIPELINE, L.P. (231735)  
14 Inch Vac to Jal Legacy  
Lea County, New Mexico  
Plains SRS # 2009-092**

**UNIT LTR "F" (SE ¼ /NW ¼ ), Section 25, Township 25 South, Range 37 East  
Latitude 32° 06' 10.7" North, Longitude 103° 07' 10.3" West  
NMOCD Reference # 1RP-2162**

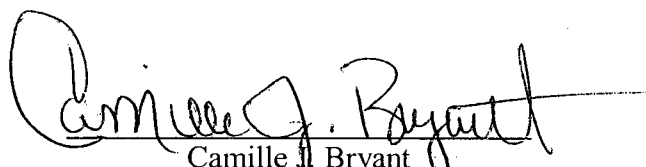
Prepared For:

Plains Pipeline, L.P.  
333 Clay Street  
Suite 1600  
Houston, Texas 77002

**RECEIVED**  
JUN 02 2010  
**HOBBSOCD**

Prepared By:  
Basin Environmental Consulting, LLC  
2800 Plains Highway  
Lovington, New Mexico 88260

**May 2010**

  
Camille J. Bryant  
Project Manager

## TABLE OF CONTENTS

INTRODUCTION BACKGROUND INFORMATION .....	1
NMOCD SITE CLASSIFICATION.....	1
SUMMARY OF SOIL REMEDIATION ACTIVITIES .....	2
SUMMARY OF GROUNDWATER REMEDIATION ACTIVITIES .....	8
PROPOSED SOIL CLOSURE ACTIVITIES .....	9
REPORTING .....	9
LIMITATIONS.....	9
DISTRIBUTION.....	11

### FIGURES

Figure 1 – Site Location Map

Figure 2 – Site and Sample Location Map

### TABLES

Table 1 – Concentrations of Benzene, BTEX and TPH in Soil

Table 2 – Concentrations of Benzene, BTEX, Chlorides and Total Dissolved Solids in Groundwater

### APPENDICES

Appendix A – Soil Boring and Monitor Well Logs

Appendix B – Analytical Reports

Appendix C - Photographs

Appendix D – Release Notification and Corrective Action (Form C-141)

## INTRODUCTION AND BACKGROUND INFORMATION

Basin Environmental Consulting, LLC (Basin), on behalf of Plains Pipeline, L.P. (Plains), has prepared this Remediation Summary and Proposed Soil Closure Strategy for the release site known as 14 Inch Vac to Jal Legacy (SRS # 2009-092). The legal description of the release site is Unit Letter "F" (SE ¼ NW ¼), Section 25, Township 25 South, Range 37 East, in Lea County, New Mexico. The property affected by the release is owned by Legacy Reserves, L.P. The release site GPS coordinates are 32° 06' 10.7" North and 103° 07' 10.3" West. Please reference Figure 1 for a Site Location Map and Figure 2 for a Site and Sample Location Map. The Release Notification and Corrective Action (Form C-141) is provided as Appendix D.

On April 9, 2009, Plains discovered a crude oil release from a fourteen (14)-inch steel pipeline. The cause of the release was attributed to external corrosion of the pipeline and was reported to the New Mexico Oil Conservation Division (NMOCD) on April 9, 2009. During initial response activities, Plains installed a temporary pipeline clamp on the pipeline to mitigate the release. Approximately two hundred fifty (250) barrels of crude oil was released from the pipeline, with no recovery. General photographs of the site are provided as Appendix C.

The release site is bisected by two (2) fourteen (14) inch Plains pipelines that run parallel through the site. Due to safety concerns associated with excavating and supporting the two (2) large diameter pipelines, Plains requested and received NMOCD approval to leave the soil beneath and adjacent to the Plains pipelines in-situ.

The 14 Inch Vac to Jal release site is located approximately 1,147 feet to the south-southeast of a documented groundwater remediation site (Arco South Justis Unit F-230). Information regarding this site can be found on the NMOCD imaging system.

## NMOCD SITE CLASSIFICATION

According to data obtained from the New Mexico Office of the State Engineer (NMOSE), no water wells are registered in Section 25, Township 25S, Range 37E. A depth to groundwater reference map utilized by the NMOCD indicates groundwater should be encountered at approximately fifty five (55) feet below ground surface (bgs). Soil boring (SB-1) was advanced by Plains and subsequently converted to a groundwater monitor well (MW-1). Groundwater was encountered at a depth of approximately sixty five (65) feet bgs in monitor well MW-1. The analytical results of the soil samples collected during the advancement of the soil boring, indicated hydrocarbon impact exceeding the NMOCD regulatory standard, was present at the groundwater interface. The depth of hydrocarbon impact results in a score of twenty (20) being assigned to the site based on the NMOCD depth to groundwater criteria.

The water well database, maintained by the NMOSE, indicated there are no water wells less than 1,000 feet from the release, resulting in zero (0) points being assigned to this site as a result of this criteria.

There are no surface water bodies located within 1,000 feet of the site. Based on the NMOCD ranking system zero (0) points will be assigned to the site as a result of the criteria.



The NMOCD guidelines indicate the 14 Inch Vac to Jal Legacy release site has an initial ranking score of twenty (20). Based on this score, the soil remediation levels for a site with a ranking score of twenty (20) points are as follows:

- Benzene – 10 mg/Kg (ppm)
- BTEX – 50 mg/Kg (ppm)
- TPH – 100 mg/Kg (ppm)

## **SUMMARY OF SOIL REMEDIATION ACTIVITIES**

On April 9, 2009, following initial response activities, excavation of the hydrocarbon impacted soil began at the site. Approximately 18,000 cubic yards (cy) of impacted soil was excavated and stockpiled on-site, pending final disposition. Final dimensions of the Main Excavation were approximately four hundred (400) feet in length, approximately two hundred (200) feet in width, and varied in depth from five (5) to fourteen (14) feet in depth. The West Excavation measured approximately one hundred fifty (150) feet in length, approximately one hundred five (105) feet width and approximately ten (10) feet in depth. The soil beneath and adjacent to the two (2) Plains pipelines was left in-situ, due to safety concerns associated with excavating and supporting the two (2) large diameter pipelines.

On April 15, 2009, a soil sample (Chloride Baseline) was collected from the stockpiled material to determine chloride concentration of the soil. The soil sample was submitted to the laboratory for chloride analysis using method E 300. The analytical results indicated a chloride concentration of 796 mg/Kg. Table 1 summarizes the Concentrations of Benzene, BTEX, TPH and Chlorides in Soil. Analytical reports are provided as Appendix B.

On May 18, 2009, two (2) soil samples (Stockpile #1 and Stockpile #2) were collected from the stockpiled material and submitted to the laboratory for analysis. The soil samples were analyzed for concentrations of benzene, toluene, ethyl-benzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH) using EPA SW 846-8021b and EPA SW 846-8015M, respectively. Laboratory analytical results indicated benzene concentrations of 3.549 mg/Kg for soil sample Stockpile #1 and 23.2 mg/Kg for soil sample Stockpile #2. BTEX concentrations were 275.569 mg/Kg for soil sample Stockpile #1 and 545.4 mg/Kg for soil sample Stockpile #2. TPH concentrations were 8,880 mg/Kg for soil sample Stockpile #1 and 18,269 mg/Kg for soil sample Stockpile #2.

On May 18, 2009, four (4) soil samples (Main Exc. NWSW, Main Exc. NESW, Main Exc. WSW and Main Exc. ESW) were collected from the Main Excavation sidewalls at depths ranging from 4.5 feet to 9 feet bgs. The soil samples were submitted to the laboratory for determination of BTEX and TPH constituent concentrations. Laboratory analytical results indicated benzene concentrations ranged from less than the appropriate laboratory method detection limit (MDL) for soil samples Main Exc. WSW and Main Exc. ESW to 0.0073 mg/Kg for soil sample Main Exc. NWSW. BTEX concentrations ranged from less than the appropriate laboratory MDL for soil samples Main Exc. WSW and Main Exc. ESW to 0.0924 mg/Kg for soil sample Main Exc. NWSW. TPH concentrations ranged from less than the laboratory MDL for soil sample Main Exc. WSW to 43.3 mg/Kg for soil sample Main Exc. NESW. Please reference Figure 2 for the Site and Sample Location Map.

In addition, four (4) soil samples (Main Exc. Floor #1, Main Exc. Floor #2, Main Exc. Floor #3 and Main Exc. Floor #4) were collected from the floor of the Main Excavation and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from less than the laboratory MDL for soil sample Main Exc. Floor #2 to 9.459 mg/Kg for soil sample Main Exc. Floor #4. BTEX concentrations ranged from 0.0046 mg/Kg for soil sample Main Exc. Floor #1 to 371.119 mg/Kg for soil sample Main Exc. Floor #4. TPH concentrations ranged from 19.8 mg/Kg for soil sample Main Exc. Floor #1 to 13,233 mg/Kg for soil sample Main Exc. Floor #4.

On May 26, 2009, nine (9) trenches were excavated to vertically and horizontally investigate the extent of hydrocarbon impacted soil at the site. Selected soil samples were submitted to the laboratory for determination of BTEX and TPH concentrations.

Trench T-1 was located in the northeast corner of the Main Excavation. The trench was completed to a total depth of approximately ten (10) feet bgs. One (1) soil sample (T-1 @ 10' bgs) was collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene, BTEX and TPH concentrations were less than the appropriate laboratory MDL.

Trench T-2 was located in the eastern portion of the Main Excavation. The trench was completed to a total depth of approximately of approximately eighteen (18) feet bgs. Three (3) soil samples (T-2 @ 12' bgs, T-2 @ 14' bgs and T-2 @ 18' bgs) were collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from 0.0023 mg/Kg for soil sample T-2 @ 18' bgs to 34.76 mg/Kg for soil sample T-2 @ 12' bgs. BTEX concentrations ranged from 0.0353 mg/Kg for soil sample T-2 @ 18' bgs to 930.1 mg/Kg for soil sample T-2 @ 12' bgs. TPH concentrations ranged from 131.3 mg/Kg for soil sample T-2 @ 18' bgs to 28,240 mg/Kg for soil sample T-2 @ 12' bgs.

Trench T-3 was located in the western portion of the Main Excavation. The trench was completed to a total depth of approximately thirty (30) feet bgs. Six (6) soil samples (T-3 @ 12' bgs, T-3 @ 14' bgs, T-3 @ 18' bgs, T-3 @ 22', T-3 @ 26' bgs and T-3 @ 30' bgs) were collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from less than the appropriate laboratory MDL for soil samples T-3 @ 26' bgs and T-3 @ 30' bgs to 11.28 mg/Kg for soil sample T-3 @ 18' bgs. BTEX concentrations ranged from 0.0568 mg/Kg for soil sample T-3 @ 22' bgs to 255.439 mg/Kg for soil sample T-3 @ 14' bgs. TPH concentrations ranged from 59 mg/Kg for soil sample T-3 @ 22' bgs to 18,110 mg/Kg for soil sample T-3 @ 18' bgs.

Trench T-4 was located in the southern portion of the Main Excavation. The trench was completed to a total depth of approximately thirty (30) feet bgs. Six (6) soil samples (T-4 @ 12' bgs, T-4 @ 14' bgs, T-4 @ 18' bgs, T-4 @ 22' bgs, T-4 @ 26' bgs and T-4 @ 30' bgs) were collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from 8.783 mg/Kg for soil sample T-4 @ 14' to 48.18 mg/Kg for soil sample T-4 @ 12' bgs. BTEX concentrations ranged from 303.923 mg/Kg for soil sample T-4 @ 14' bgs to 1,097.58 mg/Kg for soil sample T-4 @ 12' bgs. TPH concentrations ranged from 8,224 mg/Kg for soil sample T-4 @ 14' bgs to 37,550 mg/Kg for soil sample T-4 @ 12' bgs.

Trench T-5 was located in the southern portion of the West Excavation. The trench was completed to a total depth of approximately fourteen (14) feet bgs. One (1) soil sample (T-5 @ 14' bgs) was collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated a benzene concentration of 0.0078 mg/Kg, a BTEX concentration of 0.0119 mg/Kg and a TPH concentration of 32 mg/kg.

Trench T-6 was located at the release point to a total depth of approximately eighteen (18) feet bgs. Three (3) soil samples (T-6 @ 10' bgs, T-6 @ 14' bgs and T-6 @ 18' bgs) were collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from less than the laboratory MDL for soil sample T-6 @ 18' bgs to 1.999 mg/Kg for soil sample T-6 @ 10' bgs. BTEX concentrations ranged from 0.006 mg/Kg for soil sample T-6 @ 18' bgs to 89.099 mg/Kg for soil sample T-6 @ 10' bgs. TPH concentrations ranged from 28.3 mg/Kg for soil sample T-6 @ 14' bgs to 3,996 mg/Kg for soil sample T-6 @ 10' bgs.

Trench T-7 was located to the north of the release point adjacent to the Plains pipelines. The trench was completed to a total depth of approximately eighteen (18) feet bgs. Three (3) soil samples (T-7 @ 10' bgs, T-7 @ 14' bgs and T-7 @ 18' bgs) were collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from less than the laboratory MDL for soil sample T-7 @ 18' bgs to 9.257 mg/Kg for soil sample T-7 @ 10' bgs. BTEX concentrations ranged from 153.34 mg/Kg for soil sample T-7 @ 18' bgs to 212.818 mg/Kg for soil sample T-7 @ 14' bgs. TPH concentrations ranged from 9,061 mg/Kg for soil sample T-7 @ 18' bgs to 9,840 mg/Kg for soil sample T-7 @ 10' bgs.

Trench T-8 was located in the central portion of the Main Excavation. The trench was completed to a total depth of approximately fourteen (14) feet bgs. Two (2) soil samples (T-8 @ 10' bgs and T-8 @ 14' bgs) were collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene, BTEX and TPH concentrations were less than the appropriate laboratory MDL, with the exception of soil sample T-8 @ 10' bgs which exhibited a TPH concentration of 91.7 mg/Kg.

Trench T-9 was located in the southeast corner of the Main Excavation. The trench was completed to a total depth of approximately fourteen (14) feet bgs. Two (2) soil samples (T-9 @ 10' bgs and T-9 @ 14' bgs) were collected from the trench and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from 0.0062 mg/Kg for soil sample T-9 @ 14' bgs to 0.0072 mg/Kg for soil sample T-9 @ 10' bgs. BTEX concentrations ranged from 0.0249 mg/Kg for soil sample T-9 @ 14' bgs to 1.3389 mg/Kg for soil sample T-9 @ 10' bgs. TPH concentrations ranged from 106 mg/Kg for soil sample T-9 @ 14' bgs to 4,751 mg/Kg for soil sample T-9 @ 10' bgs.

On May 28, 2009, four (4) soil samples (Main Exc. ESW-1 @ 8' bgs, Main Exc. ESW-2 @ 5' bgs, Main Exc. ESW-3 @ 3' bgs and Main Exc. SSW @ 9.5' bgs) were collected from the Main Excavation sidewalls and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene, BTEX and TPH concentrations were less than the appropriate laboratory MDL for all the soil samples submitted, with the exception of soil samples Main Exc. ESW-1 @

8' bgs and Main Exc. ESW-3 @ 3' bgs, which exhibited TPH concentrations of 38.8 mg/Kg and 86.2 mg/Kg, respectively.

Based on the analytical results of the soil samples collected from the delineation trenches, further investigation of the vertical extent of hydrocarbon impacted soil at the site was warranted.

On July 1 and 2, 2009, three (3) soil borings (SB-1, SB-2 and SB-3) were advanced at the site to further delineate the vertical extent of hydrocarbon impacted soil at the site. Soil boring logs are provided as Appendix A. Soil samples were collected at five (5) foot drilling intervals and field screened using a Photo-Ionization Detector (PID). Selected soil samples were submitted to the laboratory for determination of concentrations of BTEX, TPH and chlorides.

Soil boring SB-1 was located in the southern portion of the Main Excavation at approximately ten (10) feet bgs. The soil boring was advanced to a total depth of approximately seventy (70) feet bgs. Soil samples collected at drilling depths of five (5) feet, fifteen (15) feet, twenty five (25) feet, thirty five (35) feet, forty five (45) feet, fifty (50) feet and fifty five (55) feet were submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations ranged from less than the appropriate laboratory MDL for soil samples SB-1/MW-1 @ 45', SB-1/MW-1 @ 50' and SB-1/MW-1 @ 55' to 1.447 mg/Kg for soil sample SB-1/MW-1 @ 5'. BTEX concentrations ranged from 0.0025 mg/Kg for soil sample SB-1/MW-1 @ 50' to 79.4979 mg/Kg for soil sample SB-1/MW-1 @ 25'. TPH concentrations ranged from 445 mg/Kg for soil sample SB-1/MW-1 @ 55' to 9,655 mg/Kg for soil sample SB-1/MW-1 @ 25'. Chloride concentrations ranged from 10.3 mg/Kg for soil sample SB-1/MW-1 @ 25' to 179 mg/Kg for soil sample SB-1/MW-1 @ 55'. During advancement of the soil boring, groundwater was encountered at approximately fifty four (54) feet drilling depth or approximately sixty four (64) feet bgs. On July 1, 2009, soil boring SB-1 was converted to monitor well MW-1.

Soil boring SB-2 was located in the northwest portion of the Main Excavation at approximately ten (10) feet bgs. The soil boring was advanced to a total depth of approximately seventy (70) feet bgs. Soil samples collected at drilling depths of five (5) feet, fifteen (15) feet, twenty five (25) feet, thirty five (35) feet, forty five (45) feet, fifty (50) feet and fifty five (55) feet were submitted to the laboratory for analysis. The laboratory analytical results indicated benzene concentrations were less than the appropriate laboratory MDL in all the submitted soil samples, with the exception of soil sample SB-2 @ 15', which exhibited a benzene concentration of 0.2671 mg/Kg. BTEX concentrations ranged from less than the appropriate laboratory MDL for soil samples SB-2 @ 45', SB-2 @ 50' and SB-2 @ 55' to 26.391 mg/Kg for soil sample SB-2 @ 5'. TPH concentrations ranged from 57.8 mg/Kg for soil sample SB-2 @ 35' to 4,655 mg/Kg for soil sample SB-2 @ 5'. Chloride concentrations ranged from less than the laboratory MDL for soil sample SB-2 @ 35' to 952 mg/Kg for soil sample SB-2 @ 55'. During the advancement of the soil boring, groundwater was encountered at approximately fifty four (54) feet drilling depth or approximately sixty four (64) feet bgs. A temporary casing was installed in the soil boring to allow a "preliminary" groundwater sample to be collected for analysis. On July 2, 2009, a groundwater sample (Prelim GW SB-2) was collected from the temporary casing and submitted to the laboratory for analysis. Following the collection of the groundwater sample, the temporary casing was removed from the soil boring and the soil boring was plugged with cement and bentonite, as required by the New Mexico Office of the State Engineer (NMOSE). A description of the analytical results of the collected groundwater sample (Prelim GW SB-2) is included in the Summary of Groundwater Remediation Activities below.

Soil boring SB-3 was located to the north of the release point adjacent to the Plains pipeline, to a total depth of approximately seventy (70) feet bgs. Soil samples collected at five (5) feet, fifteen (15) feet, twenty five (25) feet, thirty five (35) feet, forty five (45) feet, fifty (50) feet, fifty five (55) feet and sixty (60) feet were submitted to the laboratory for analysis. Laboratory analytical results indicated benzene concentrations were less than the laboratory MDL for all the submitted soil samples, with the exception of soil sample SB-3 @ 5', which exhibited a benzene concentration of 0.0644 mg/Kg. BTEX concentrations ranged from less than the laboratory MDL for soil sample SB-3 @ 35' to 17.728 mg/Kg for soil sample SB-3 @ 25'. TPH concentrations ranged from 72.2 mg/Kg for soil sample SB-3 @ 50' to 6,226 mg/Kg for soil sample SB-3 @ 5'. Chloride concentrations ranged from 8.94 mg/Kg for soil sample SB-3 @ 50' to 152 mg/Kg for soil sample SB-3 @ 5'. During the advancement of the soil boring, groundwater was encountered at approximately sixty four (64) feet bgs. A temporary casing was installed in the soil boring to allow a "preliminary" groundwater sample to be collected for analysis. On July 2, 2009, a groundwater sample (Prelim GW SB-3) was collected from the temporary casing and submitted to the laboratory for analysis. Following the collection of the groundwater sample, the temporary casing was removed from the soil boring and the soil boring was plugged with cement and bentonite, as required by the NMOSE. A description of the analytical results of the collected groundwater sample (Prelim GW SB-3) is included in the Summary of Groundwater Remediation Activities below.

On September 18, 2009, approximately five hundred (500) cubic yards of impacted soil was placed in a treatment cell and treated by blending and aeration methods.

On September 24, 2009, one (1) soil sample (Treatment Cell #1) was collected from the treatment cell and submitted to the laboratory for analysis. Laboratory analytical results indicated a benzene concentration of 1.539 mg/Kg, a BTEX concentration of 136.31 mg/Kg and a TPH concentration of 11,310 mg/Kg.

On September 30, 2009, three (3) soil samples (West Exc. NSW-1, West Exc. WSW-1 and West Exc. SSW-1) were collected from the West Excavation sidewalls and submitted to the laboratory for analysis. Laboratory analytical results indicated benzene, BTEX and TPH concentrations were less than the appropriate laboratory MDL for all the submitted soil samples, with the exception of soil sample West Exc. SSW-1, which exhibited a TPH concentration of 20.7 mg/Kg.

Two (2) soil samples (West Exc. Floor-1 and West Exc. Floor-2) were collected from the floor of the excavation and submitted to the laboratory for analysis. The laboratory analytical results indicated benzene, BTEX and TPH concentrations were less than the appropriate laboratory MDL for all the submitted soil samples.

On November 10, 2009, at the request of the NMOCD, the excavations were divided into seventy five (75) foot grids. Fourteen (14) soil samples (GP #1 @ 6', GP #2 @ Grade, GP #3 @ Grade, GP #4 @ 5', GP #5 @ 7', GP #6 @ 9', GP #7 @ 9', GP #8 @ 9', GP #9 @ 10', GP #10 @ 7', GP #11 @ 7', GP #12 @ 10', GP #13 @ 10' and GP #14 @ 12') were collected from the Main Excavation grid points and submitted to the laboratory for analysis of concentrations of TPH and chloride. Laboratory analytical results indicated TPH concentrations ranged from less than the laboratory MDL for soil sample GP #8 @ 9' to 4,696 mg/Kg for soil sample GP #6 @

9'. Chloride concentrations ranged from less than the appropriate laboratory MDL for soil samples GP #6 @ 9' and GP # 12 @ 10' to 3,510 mg/Kg for soil sample GP #3 @ Grade.

Two (2) soil samples (GP #15 @ 10' and GP # 16 @ 10') were collected from the West Excavation grid points and submitted to the laboratory for analysis of concentrations of TPH and chlorides. Laboratory analytical results indicated TPH concentrations ranged from less than the laboratory MDL for soil sample GP #16 @ 10' to 69.7 mg/Kg for soil sample GP #15 @ 10'. Chloride concentrations ranged from 9.57 mg/Kg for soil sample GP # 16 @ 10' to 62.9 mg/Kg for soil sample GP #15 @ 10'.

On December 10, 2009, two (2) soil borings (SB #4 and SB #5) were installed up gradient of the excavation to evaluate the potential groundwater impact from an up gradient, off-site source.

Soil boring SB #4 was located approximately two hundred fifty (250) feet to the north northwest of the site, to a total depth of approximately seventy five (75) feet bgs. Soil samples collected at ten (10) feet, twenty (20) feet, thirty (30) feet, forty (40) feet and fifty (50) feet were submitted to the laboratory for analysis of concentrations of chlorides. Laboratory analytical results indicated chloride concentrations ranged from less than the laboratory MDL for soil sample SB #4 @ 50' to 85.3 mg/Kg for soil sample SB #4 @ 10'. Groundwater was encountered at approximately sixty four (64) feet bgs in the soil boring. A temporary casing was installed in the soil boring to allow a "preliminary" groundwater sample to be collected for analysis. On December 22, 2009, a groundwater sample (SB-4 GW) was collected from the temporary casing and submitted to the laboratory for analysis. Following the collection of the groundwater sample, the temporary casing was removed from the soil boring and the soil boring was plugged with cement and bentonite, as required by the NMOSE. A description of the analytical results of the collected groundwater sample (SB-4 GW) is included in the Summary of Groundwater Remediation Activities below.

Soil boring SB #5 was located approximately seven hundred fifteen (715) feet to the north northwest of the site to a total depth of approximately eighty (80) feet bgs. Soil samples collected at ten (10) feet, twenty (20) feet, thirty (30) feet, forty (40) feet and forty five (45) feet were submitted to the laboratory for analysis of concentrations of chlorides. Laboratory analytical results indicated chloride concentrations ranged from 6.71 mg/Kg for soil sample SB #5 @ 45' to 263 mg/Kg for soil sample SB #5 @ 20'. Groundwater was encountered at approximately sixty four (64) feet bgs in the soil boring. A temporary casing was installed in the soil boring to allow a "preliminary" groundwater sample to be collected for analysis. On December 22, 2009, a groundwater sample (SB-5 GW) was collected from the temporary casing and submitted to the laboratory for analysis. Following the collection of the groundwater sample, the temporary casing was removed from the soil boring and the soil boring was plugged with cement and bentonite, as required by the NMOSE. A description of the analytical results of the collected groundwater sample (SB-5 GW) is included in the Summary of Groundwater Remediation Activities below.

On April 28 and 29, 2010, Basin transported approximately 1,440 cy of impacted soil to Sundance Services, Inc. (NMOCD Permit # NM-01003) for disposal.

## SUMMARY OF GROUNDWATER REMEDIATION ACTIVITIES

On July 2, 2009, groundwater samples were collected from the temporary casing installed in soil borings SB-2 and SB-3. The analytical results of the groundwater collected from SB-2 indicated a benzene concentration of 0.0063 mg/L, a toluene concentration of 0.0158 mg/L, an ethyl-benzene concentration of 0.0054 mg/L and a total xylene concentration of 0.0107 mg/L. The results further indicated a chloride concentration of 10,200 mg/L and a TDS concentration of 19,700 mg/L. The analytical results of the groundwater collected from SB-3 indicated benzene and BTEX concentrations were less than the appropriate laboratory MDL. The results further indicated a chloride concentration of 10,500 mg/L and a TDS concentration of 20,500 mg/L. Laboratory analytical results indicated benzene and BTEX concentrations were less than the NMOCD regulatory standards for SB-2 and SB-3. Laboratory analytical results exceeded NMOCD regulatory standards for concentrations of chlorides and TDS in SB-1 and SB-2. Table 2 summarizes the Concentrations of Benzene, BTEX, Chlorides and Total Dissolved Solids in Groundwater.

The site monitor well (MW-1) was gauged, purged and sampled on July 6, 2009, October 21, 2009 and March 11, 2010. The monitor well was gauged and purged of a minimum of three (3) well volumes of water or until the wells were dry using a PVC bailer or electrical Grundfos Pump. Groundwater was allowed to recharge and samples were obtained using disposable Teflon bailers. Water samples were stored in clean, glass containers provided by the laboratory and placed on ice in the field. Purge water was collected in a trailer mounted polystyrene tank and disposed of at an approved disposal in Monument, New Mexico.

The analytical results of the July 6, 2009, groundwater sampling event indicated all BTEX constituent concentrations were less than the laboratory MDL. The analytical results indicated a chloride concentration of 5,300 mg/L and a TDS concentration of 14,300 mg/L. Laboratory analytical results indicated benzene and BTEX concentrations were less than the NMOCD regulatory standards. Analytical results indicated concentrations of chlorides and TDS exceeded NMOCD regulatory standards.

The analytical results of the October 21, 2009, groundwater sampling event indicated a benzene concentration of 0.0125 mg/L, a toluene concentration of 0.0049 mg/L, ethyl-benzene and total xylene concentrations were less than the appropriate laboratory MDL. Laboratory analytical results indicated benzene concentrations exceeded NMOCD regulatory standards. Analytical results indicated concentrations of toluene, ethyl-benzene and total xylenes were less than NMOCD regulatory standards.

The analytical results of the March 11, 2010, groundwater sampling event indicated a benzene concentration of 0.072 mg/L, a toluene concentration of 0.0243 mg/L, an ethyl-benzene concentration of 0.002 mg/L and total xylene concentration of 0.0017 mg/L. Laboratory analytical results indicated benzene concentrations exceeded NMOCD regulatory standards. Analytical results indicated concentrations of toluene, ethyl-benzene and total xylenes were less than NMOCD regulatory standards.

On December 22, 2009, groundwater samples were collected from the temporary casing installed in soil boring SB-4 and SB-5. Analytical results of the groundwater collected from SB-4 indicated chloride concentration of 8,580 mg/L and a TDS concentration of 15,700 mg/L. The

analytical results of the groundwater collected from SB-5 indicated a chloride concentration of 9,920 mg/L and a TDS concentration of 18,200 mg/L. Laboratory analytical results indicated concentrations of chlorides and TDS exceeded NMOCD regulatory standards in the two (2) up gradient soil borings.

The 14 Inch Vac to Jal release site is located approximately 1,147 feet to the south-southeast of a documented groundwater remediation site (Arco South Justis Unit F-230). Information regarding this release can be found on the NMOCD imaging system.

## **PROPOSED SOIL CLOSURE STRATEGY**

Plains proposes the following soil remediation activities designed to progress the 14 Inch Vac to Jal Legacy release site toward an NMOCD approved soil closure:

- Plains will mechanically screen the on-site stockpiles to segregate large blocks of caliche from the soil. The large blocks of caliche will be placed in the existing excavation during backfilling activities. Plains proposes to collect a stockpile soil sample for each 500 cubic yards of segregated soil. The soil samples will be submitted to the laboratory and analyzed for concentrations of BTEX using EPA method 8021b and TPH using SW-846 8015M. Provided the analytical results indicate the TPH concentration of the soil sample is less than 5,000 mg/Kg as approved by the NMOCD, the soil will be stockpiled and used as backfill. Should the analytical results indicate the TPH concentration of any of the stockpile soil samples exceed 5,000 mg/Kg, the affected soil will be blended and re-sampled until TPH concentrations are less than 5,000 mg/Kg TPH.
- Plains proposes to backfill the excavation with the blended material. The excavation will be backfilled and compacted in twelve (12) inch lifts. The upper one half (0.5) to one (1) foot of soil will be non-impacted soil locally purchased. Following backfill activities the surface will be contoured to fit the surrounding topography. Reseeding of the site with vegetation acceptable to the landowner will take place at the conclusion of the proposed remediation activities.

## **REPORTING**

On completion of the proposed soil closure strategy activities, Plains will submit a Remediation Summary and Site Closure Request for NMOCD approval. On NMOCD approval, Plains will request permission to plug and abandon the on-site monitor well.

## **LIMITATIONS**

Basin Environmental Consulting, LLC has prepared this Remediation Summary and Soil Closure Strategy to the best of its ability. No other warranty, expressed or implied, is made or intended.

Basin Environmental Consulting, LLC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. Basin Environmental Consulting, LLC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and



that the information provided in documents or statements is true and accurate. Basin Environmental Consulting, LLC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin Environmental Consulting, LLC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of Plains Pipeline, L.P. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of Basin Environmental Consulting, LLC and/or Plains Pipeline, L.P.

## **DISTRIBUTION:**

- Copy 1: Larry Johnson  
New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division (District 1)  
1625 French Drive  
Hobbs, New Mexico 88240
- Copy 2 Legacy Reserves, LP  
P.O. Box 10848  
Midland, Texas 79702
- Copy 3: Jeff Dann  
Plains Pipeline, L.P.  
333 Clay Street, Suite 1600  
Houston, Texas 77002  
jpdann@paalp.com
- Copy 4: Jason Henry  
Plains Pipeline, L.P.  
2530 State Highway 214  
Denver City, Texas 79323  
jhenry@paalp.com
- Copy 5: Basin Environmental Consulting, LLC  
P.O. Box 381  
Lovington, New Mexico 88260  
cjbryant@basin-consulting.com

## Figures

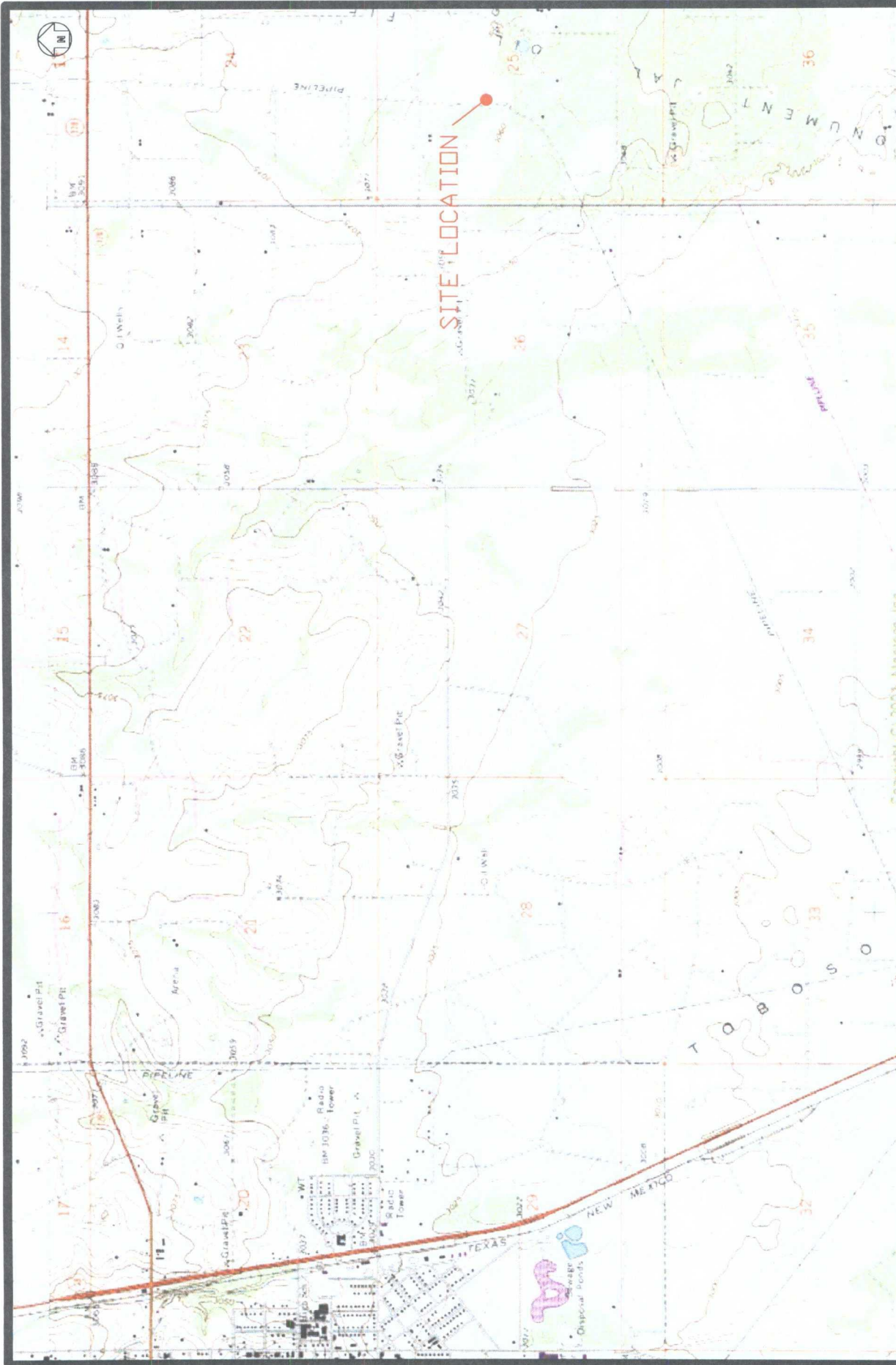


Figure 1  
Site Location Map  
Plains Pipeline, L.P.  
14-Inch Vac to Jal - Legacy  
Lea County, New Mexico  
SRS# 2009-092  
NMOCD Ref 1RP-2162

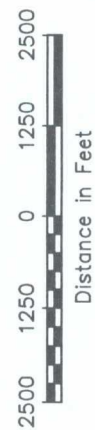
# Basin Environmental Consulting

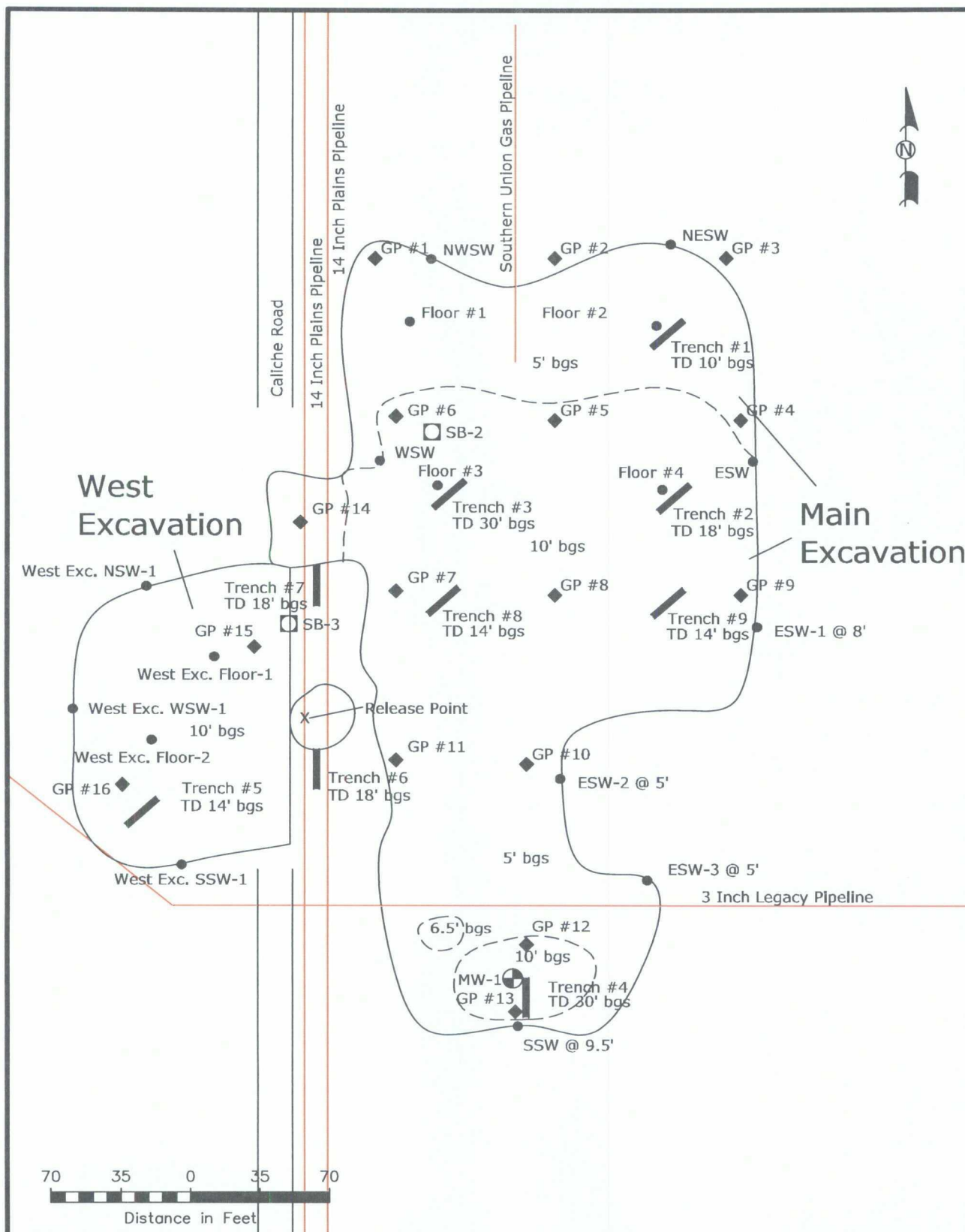
Prep By: CDS

Checked By: CDS

May 12, 2010

Scale 1"=2,500'





**LEGEND:**

- Soil Sample Location
- Pipeline
- Excavation Extent
- ⊕ Monitor Well Location
- Soil Boring Location

**Figure 2**  
 Site and Sample Location Map  
 Plains Pipeline, L.P.  
 14-Inch Vac to Jal - Legacy  
 Lea County, NM  
 SRS # 2009-092  
 1RP-2162

**Basin Environmental Consulting**

Scale: 1" = 70'	Drawn By: CDS	Prepared By: CDS
November 11, 2009		

# Tables

TABLE 1

## CONCENTRATIONS OF BENZENE, BTX, TPH AND CHLORIDES IN SOIL

PLAINS PIPELINE, L.P.

14" VAC TO JAL - LEGACY

LEA COUNTY, NEW MEXICO

SRS: 2009-092

NMOC REFERENCE NO: 1RP-2162

SAMPLE LOCATION	SAMPLE DEPTH (BGS)	SAMPLE DATE	DATE ANALYZED	SOIL STATUS	METHOD: EPA SW 846-8021B, 5030				METHOD: 8015M				TOTAL TPH C <sub>10</sub> -C <sub>35</sub> (mg/Kg)	E 300 CHLORIDE (mg/Kg)
					BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M.P.-XYLENES (mg/Kg)	O-XYLENES (mg/Kg)	TOTAL BTX (mg/Kg)	GRO C <sub>6</sub> -C <sub>12</sub> (mg/Kg)	DRO C <sub>12</sub> -C <sub>28</sub> (mg/Kg)	ORO C <sub>28</sub> -C <sub>35</sub> (mg/Kg)	
Chloride Baseline	N/A	04/15/09	04/17/09	N/A	-	-	-	-	-	-	-	-	-	796
Stockpile #1	N/A	05/18/09	05/27/09	N/A	3.549	88.56	63.06	88.09	32.31	275.569	3.990	4.890	<333	8.880
Stockpile #2	N/A	05/18/09	05/27/09	N/A	23.2	233	111	165.8	12.4	545.4	8.260	9.340	669	18.269
Main Exc. NWSW	4.5 Feet	05/18/09	05/27/09	In-Situ	0.0073	0.0354	0.0158	0.0249	0.009	0.0924	18	18.1	<15.4	36.1
Main Exc. NESW	4.5 Feet	05/18/09	05/27/09	In-Situ	0.0013	<0.0022	<0.0011	<0.0022	<0.0011	0.0013	<16.4	43.3	<16.4	43.3
Main Exc. WSW	9 Feet	05/18/09	05/27/09	In-Situ	<0.0011	<0.0022	<0.0011	<0.0022	<0.0011	<0.0022	<16.2	<16.2	<16.2	<16.2
Main Exc. ESW	8 Feet	05/18/09	05/27/09	In-Situ	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	<15.4	21.3	<15.4	21.3
Main Exc. Floor #1	5 Feet	05/18/09	05/27/09	In-Situ	0.0013	0.0033	<0.0010	<0.0021	<0.0010	0.0046	<15.4	19.8	<15.4	19.8
Main Exc. Floor #2	5 Feet	05/18/09	05/27/09	In-Situ	<2.397	26.82	41.51	71.76	27.42	167.51	4.460	7.640	<359	12.100
Main Exc. Floor #3	10 Feet	05/18/09	05/27/09	In-Situ	0.0022	0.0071	0.0013	<0.0020	<0.0010	0.0106	50.9	1.460	95.4	1,606.3
Main Exc. Floor #4	10 Feet	05/18/09	05/27/09	In-Situ	9.459	106.7	84.72	123	47.24	371.119	4.970	7.740	523	13,233
T-1 @ 10' bgs	10 Feet	05/26/09	05/31/09	In-Situ	<0.0011	<0.0022	<0.0011	<0.0022	<0.0011	<0.0022	<16.4	<16.4	<16.4	<16.4
T-2 @ 12' bgs	12 Feet	05/26/09	05/31/09	In-Situ	34.76	323.9	189.7	285	96.74	930.1	10,300	16,500	1,440	28,240
T-2 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	18.84	223.7	136.1	206	70.99	655.63	7,000	10,500	1,050	18,550
T-2 @ 18' bgs	18 Feet	05/26/09	05/31/09	In-Situ	0.0023	0.0088	0.0069	0.0121	0.0052	0.0353	22.3	109	<17.3	131.3
T-3 @ 12' bgs	12 Feet	05/26/09	05/31/09	In-Situ	4.046	55.43	43.23	66.87	23.7	193.276	3,550	6,450	725	10,725
T-3 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	4.059	74.4	58.59	87.36	31.03	255.439	3,980	7,300	785	12,065
T-3 @ 18' bgs	18 Feet	05/26/09	05/31/09	In-Situ	11.28	83.91	48.65	73.01	24.87	241.72	5,930	11,100	1,080	18,110
T-3 @ 22' bgs	22 Feet	05/26/09	05/31/09	In-Situ	0.007	0.025	0.0085	0.011	0.0053	0.0568	<18.5	59	<18.5	59
T-3 @ 26' bgs	26 Feet	05/26/09	05/31/09	In-Situ	<0.1194	0.6279	1.565	4.657	2.401	9.2509	289	910	81.9	1,280.9
T-3 @ 30' bgs	30 Feet	05/26/09	05/31/09	In-Situ	<1.073	2.587	3.671	6.086	2.512	14.856	420	1,400	118	1,938
T-4 @ 12' bgs	12 Feet	05/26/09	05/31/09	In-Situ	48.18	400.1	211.1	327.2	111	1097.58	13,200	22,300	2,050	37,550
T-4 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	8.783	102	63.4	96	33.74	303.923	3,100	4,600	524	8,224
T-4 @ 18' bgs	18 Feet	05/26/09	05/31/09	In-Situ	29.02	277.2	142.5	215.4	73.52	737.64	9,680	14,200	1,340	25,220
T-4 @ 22' bgs	22 Feet	05/26/09	05/31/09	In-Situ	20.63	163.3	80.59	111.1	39.38	415	8,240	13,700	1,130	23,070
T-4 @ 26' bgs	26 Feet	05/26/09	05/31/09	In-Situ	31.62	213.1	111	158.5	55.5	569.72	5,040	7,900	853	13,793
T-4 @ 30' bgs	30 Feet	05/26/09	05/31/09	In-Situ	23.12	250.2	143	214.8	74.02	705.14	7,750	11,000	1,290	20,040
T-5 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	0.0078	0.0041	<0.0012	<0.0025	<0.0012	0.0119	<18.6	32	<18.6	32
T-6 @ 10' bgs	10 Feet	05/26/09	05/31/09	In-Situ	1.999	20.67	21.2	32.8	12.43	89.099	1,080	2,620	296	3,996
T-6 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	0.0013	0.0053	0.0015	<0.0025	<0.0013	0.0081	<18.9	28.3	<18.9	28.3
T-6 @ 18' bgs	18 Feet	05/26/09	05/31/09	In-Situ	<0.0012	0.0042	0.0018	<0.0024	<0.0012	0.006	<18.3	66.6	<18.3	66.6
T-7 @ 10' bgs	10 Feet	05/26/09	05/31/09	In-Situ	9.257	56.21	35.25	54.67	19.97	175.357	3,460	5,480	900	9,840
T-7 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	5.998	62.42	46.94	71.87	25.59	212.818	3,170	5,270	799	9,239
T-7 @ 18' bgs	18 Feet	05/26/09	05/31/09	In-Situ	<1.2	33.32	37.7	59.77	22.55	153.34	3,190	5,010	861	9,061
T-8 @ 10' bgs	10 Feet	05/26/09	05/31/09	In-Situ	<0.0011	<0.0023	<0.0011	<0.0023	<0.0011	<0.0023	<17.0	47.4	44.3	91.7
T-8 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	<0.0012	<0.0023	<0.0012	<0.0023	<0.0012	<0.0023	<17.4	<17.4	<17.4	<17.4
T-9 @ 10' bgs	10 Feet	05/26/09	05/31/09	In-Situ	0.0072	0.3247	0.2975	0.4625	0.247	1.3389	383	3,720	648	4,751

TABLE 1

## CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDES IN SOIL

PLAINS PIPELINE, L.P.

14" VAC TO JAL - LEGACY

LEA COUNTY, NEW MEXICO

SRS: 2009-092

NMOC REFERENCE NO: IRP-2162

SAMPLE LOCATION	SAMPLE DEPTH (BGS)	SAMPLE DATE	DATE ANALYZED	SOIL STATUS	METHOD: EPA SW 846-8021B, 5030					METHOD: 8015M					TOTAL TPH C <sub>6</sub> -C <sub>35</sub> (mg/Kg)	E 300 CHLORIDE (mg/Kg)
					BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M.P. - XYLENES (mg/Kg)	O-XYLENES (mg/Kg)	TOTAL BTEX (mg/Kg)	GRO C <sub>6</sub> -C <sub>12</sub> (mg/Kg)	DRO C <sub>13</sub> -C <sub>38</sub> (mg/Kg)	ORO C <sub>38</sub> -C <sub>35</sub> (mg/Kg)			
T-9 @ 14' bgs	14 Feet	05/26/09	05/31/09	In-Situ	0.0062	<0.0023	0.0018	0.0097	0.0072	0.0249	<17.6	69.7	36.3	106	-	
Main Exc. ESW-1 @ 8' bgs	8 Feet	05/28/09	06/01/09	In-Situ	<0.0011	<0.0022	<0.0011	<0.0022	<0.0011	<0.0022	<16.8	38.8	<16.8	38.8	-	
Main Exc. ESW-2 @ 5' bgs	5 Feet	05/28/09	06/01/09	In-Situ	<0.0011	<0.0021	<0.0011	<0.0021	<0.0011	<0.0021	<16.0	<16.0	<16.0	<16.0	-	
Main Exc. ESW-3 @ 3' bgs	3 Feet	05/28/09	06/01/09	In-Situ	<0.0010	<0.0021	<0.0010	<0.0021	<0.0010	<0.0021	<15.5	59.9	26.3	86.2	-	
Main Exc. SSW @ 9.5' bgs	9.5 Feet	05/28/09	06/01/09	In-Situ	<0.0011	<0.0022	<0.0011	<0.0022	<0.0011	<0.0022	<16.6	<16.6	<16.6	<16.6	-	
SB-1 / MW-1 @ 5'	15 feet	07/01/09	07/10/09	In-Situ	1.447	13.56	10.15	14.23	6.562	45.949	731	2,310	<183	3,041	53.4	
SB-1 / MW-1 @ 15'	25 Feet	07/01/09	07/10/09	In-Situ	1.197	12.27	8.475	12.21	5.658	39.81	551	1,980	126	2,657	23	
SB-1 / MW-1 @ 25'	35 Feet	07/01/09	07/10/09	In-Situ	0.5279	18.58	18.72	29.75	11.92	79.4979	1,950	7,270	435	9,655	10.3	
SB-1 / MW-1 @ 35'	45 Feet	07/01/09	07/10/09	In-Situ	0.556	10.74	17.45	30.49	11.55	70.7856	66.8	827	51.6	945.4	12.5	
SB-1 / MW-1 @ 45'	55 Feet	07/01/09	07/10/09	In-Situ	<0.0010	0.0127	0.0642	0.1268	0.0578	0.2615	98	1,060	70.7	1,229.1	22.1	
SB-1 / MW-1 @ 50'	60 Feet	07/01/09	07/10/09	In-Situ	<0.0010	<0.0021	<0.0010	0.0025	<0.0010	0.0025	336	2,910	195	3,441	19.6	
SB-1 / MW-1 @ 55'	65 Feet	07/01/09	07/10/09	In-Situ	<0.0011	<0.0021	0.0068	0.0094	0.0083	0.0245	25.8	392	27.6	445	179	
SB-2 @ 5'	15 Feet	07/01/09	07/14/09	In-Situ	<0.0279	2.41	7.296	11.59	5.095	26.391	904	3,610	141	4,655	47.7	
SB-2 @ 15'	25 Feet	07/01/09	07/13/09	In-Situ	0.2671	4.984	2.384	9.315	3.829	20.7791	555	2,210	107	2,872	34	
SB-2 @ 25'	35 Feet	07/01/09	07/12/09	In-Situ	<0.0011	<0.0023	0.0019	0.0058	0.0032	0.0109	21.1	196	<16.9	217.1	32.3	
SB-2 @ 35'	45 Feet	07/01/09	07/10/09	In-Situ	<0.0010	<0.0021	0.0032	0.0078	0.0035	0.0145	<15.4	57.8	<15.4	57.8	<51.5	
SB-2 @ 45'	55 Feet	07/01/09	07/13/09	In-Situ	<0.0011	<0.0021	<0.0011	<0.0021	<0.0011	<0.0021	27.2	261	20.2	308.4	51.2	
SB-2 @ 50'	60 Feet	07/01/09	07/12/09	In-Situ	<0.0011	<0.0021	<0.0011	<0.0021	<0.0011	<0.0021	19.6	105	<16.0	124.6	47.1	
SB-2 @ 55'	65 Feet	07/01/09	07/12/09	In-Situ	<0.0011	<0.0022	<0.0011	<0.0022	<0.0011	<0.0022	16.8	86.8	<16.8	103.6	952	
SB-3 @ 5'	5 Feet	07/02/09	07/13/09	In-Situ	0.0644	1.411	1.604	2.708	0.9809	6.7683	1,550	4,450	226	6,226	152	
SB-3 @ 15'	15 Feet	07/02/09	07/14/09	In-Situ	<0.0272	0.6387	2.621	4.548	1.919	9.7267	477	2,660	155	3,292	73	
SB-3 @ 25'	25 Feet	07/02/09	07/14/09	In-Situ	<0.5530	2.969	4.529	7.355	2.875	17.728	887	4,560	268	5,715	54.4	
SB-3 @ 35'	35 Feet	07/02/09	07/10/09	In-Situ	<0.0010	<0.0021	<0.0010	<0.0021	<0.0010	<0.0010	<15.6	103	<15.6	103	24.8	
SB-3 @ 45'	45 Feet	07/02/09	07/10/09	In-Situ	<0.0010	<0.0021	0.0023	0.0054	0.0028	0.0105	17.3	113	18	148.3	17.2	
SB-3 @ 50'	50 Feet	07/02/09	07/10/09	In-Situ	<0.0010	<0.0020	0.0015	0.0035	0.0018	0.0068	<15.3	72.2	<15.3	72.2	8.94	
SB-3 @ 55'	55 Feet	07/02/09	07/10/09	In-Situ	<0.0010	0.0035	0.0142	0.0305	0.0137	0.0619	23.3	159	18.2	200.5	24.1	
SB-3 @ 60'	60 Feet	07/02/09	07/10/09	In-Situ	<0.0010	<0.0021	0.0038	0.0087	0.0041	0.0166	23.7	126	18.5	168.2	46.1	
Treatment Cell #1	Backfill	09/24/09	09/30/09	In-Situ	1.539	31.4	30.15	51.23	21.99	136.31	2,560.0	8,530	220.0	11,310.0	-	
West Exc. NSW-1	8 Feet	09/30/09	10/03/09	In-Situ	<0.0011	<0.0022	<0.0011	<0.0022	<0.0011	<0.0022	<16.7	<16.7	<16.7	<16.7	-	
West Exc. WSW-1	8 Feet	09/30/09	10/03/09	In-Situ	<0.0012	<0.0024	<0.0012	<0.0024	<0.0012	<0.0022	<18.3	<18.3	<18.3	<18.3	-	
West Exc. SSW-1	8 Feet	09/30/09	10/03/09	In-Situ	<0.0011	<0.0023	<0.0011	<0.0023	<0.0011	<0.0023	<17.2	20.7	<17.2	20.7	-	
West Exc. Floor-1	10 Feet	09/30/09	10/03/09	In-Situ	<0.0012	<0.0023	<0.0012	<0.0023	<0.0012	<0.0023	<17.6	<17.6	<17.6	<17.6	-	
West Exc. Floor-2	10 Feet	09/30/09	10/03/09	In-Situ	<0.0012	<0.0024	<0.0012	<0.0024	<0.0012	<0.0024	<18.0	<18.0	<18.0	<18.0	-	
GP #1 @ 6'	6 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	<16.1	31.4	<16.1	31.4	119	
GP #2 @ Grade	Surface	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	31.1	522	134	687.1	11.6	
GP #3 @ Grade	Surface	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	<15.5	263	74.8	337.8	3510	
GP #4 @ 5'	5 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	<16.3	19.7	<16.3	19.7	772	



TABLE 1

## CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDES IN SOIL

PLAINS PIPELINE, L.P.

14" VAC TO JAL - LEGACY

LEA COUNTY, NEW MEXICO

SRS: 2009-092

NMOCD REFERENCE NO: IRP-2162

SAMPLE LOCATION	SAMPLE DEPTH (BGS)	SAMPLE DATE	DATE ANALYZED	SOIL STATUS	METHOD: EPA SW 846-8021B, 5030					METHOD: 8015M					TOTAL TPH C <sub>6</sub> -C <sub>35</sub> (mg/Kg)	E 300 CHLORIDE (mg/Kg)
					BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	M.P.-XYLENES (mg/Kg)	O-XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)	GRO C <sub>6</sub> -C <sub>12</sub> (mg/Kg)	DRO C <sub>12</sub> -C <sub>38</sub> (mg/Kg)	ORO C <sub>38</sub> -C <sub>35</sub> (mg/Kg)			
GP #5 @ 7'	7 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<15.7	62.1	<15.7	62.1	142
GP #6 @ 9'	9 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	216	4,190	290	4,696	<5.22
GP #7 @ 9'	9 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<16.2	40.6	<16.2	40.6	71.5
GP #8 @ 9'	9 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<16.5	<16.5	<16.5	<16.5	378
GP #9 @ 10'	10 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	36.4	286	16.2	338.6	6.72
GP #10 @ 7'	7 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<15.9	23.2	<15.9	23.2	16.6
GP #11 @ 7'	7 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<15.4	170	18.6	188.6	21.3
GP #12 @ 10'	10 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	688	3,670	227	4,585	<5.17
GP #13 @ 10'	10 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<17.1	51.9	<17.1	51.9	219
GP #14 @ 12'	12 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	212	2,920	199	3,331	9.32
GP #15 @ 10'	10 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<16.2	69.7	<16.2	69.7	62.9
GP #16 @ 10'	10 Feet	11/10/09	11/10/09	In-Situ	-	-	-	-	-	-	-	<18.8	<18.8	<18.8	<18.8	9.57
SB #4 @ 10'	10 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	85.3
SB #4 @ 20'	20 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	26.8
SB #4 @ 30'	30 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	61.8
SB #4 @ 40'	40 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	26.5
SB #4 @ 50'	50 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	<5.02
SB #5 @ 10'	10 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	117
SB #5 @ 20'	20 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	263
SB #5 @ 30'	30 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	55.5
SB #5 @ 40'	40 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	6.71
SB #5 @ 45'	45 Feet	12/10/09	12/15/09	In-Situ	-	-	-	-	-	-	-	-	-	-	-	183

TABLE 2

## CONCENTRATIONS OF BENZENE, BTEX, CHLORIDES AND TOTAL DISSOLVED SOLIDS IN GROUNDWATER

PLAINS PIPELINE, L.P.  
 14-INCH VAC TO JAL LEGACY  
 LEA COUNTY, NEW MEXICO  
 PLAINS SRS NO. 2009-092  
 NMOCD REFERENCE NO: 1R-2162

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021B, 5030						CHLORIDES (mg/L)	TDS (mg/L)
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P-XYLENES (mg/L)	O-XYLENES (mg/L)	TOTAL BTEX (mg/L)		
Prelim GW (SB-2)	07/02/09	0.0063	0.0158	0.0054	0.007	0.0037	0.0382	10,200	19,700
Prelim GW (SB-3)	07/02/09	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	10,500	20,500
MW-1	07/06/09	<0.001	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	5,300	14,300
MW-1	10/21/09	0.0125	0.0049	<0.0010	<0.0020	<0.0010	0.0174	-	-
MW-1	03/11/10	0.072	0.0243	0.002	<0.0020	0.0017	0.1	-	-
SB-4 GW	12/22/09	-	-	-	-	-	-	8,580	15,700
SB-5 GW	12/22/09	-	-	-	-	-	-	9,920	18,200
NMOCD CRITERIA		0.01	0.75	0.75	TOTAL XYLENES 0.62			250	10,000

TABLE 2

## CONCENTRATIONS OF BENZENE, BTEX, CHLORIDES AND TOTAL DISSOLVED SOLIDS IN GROUNDWATER

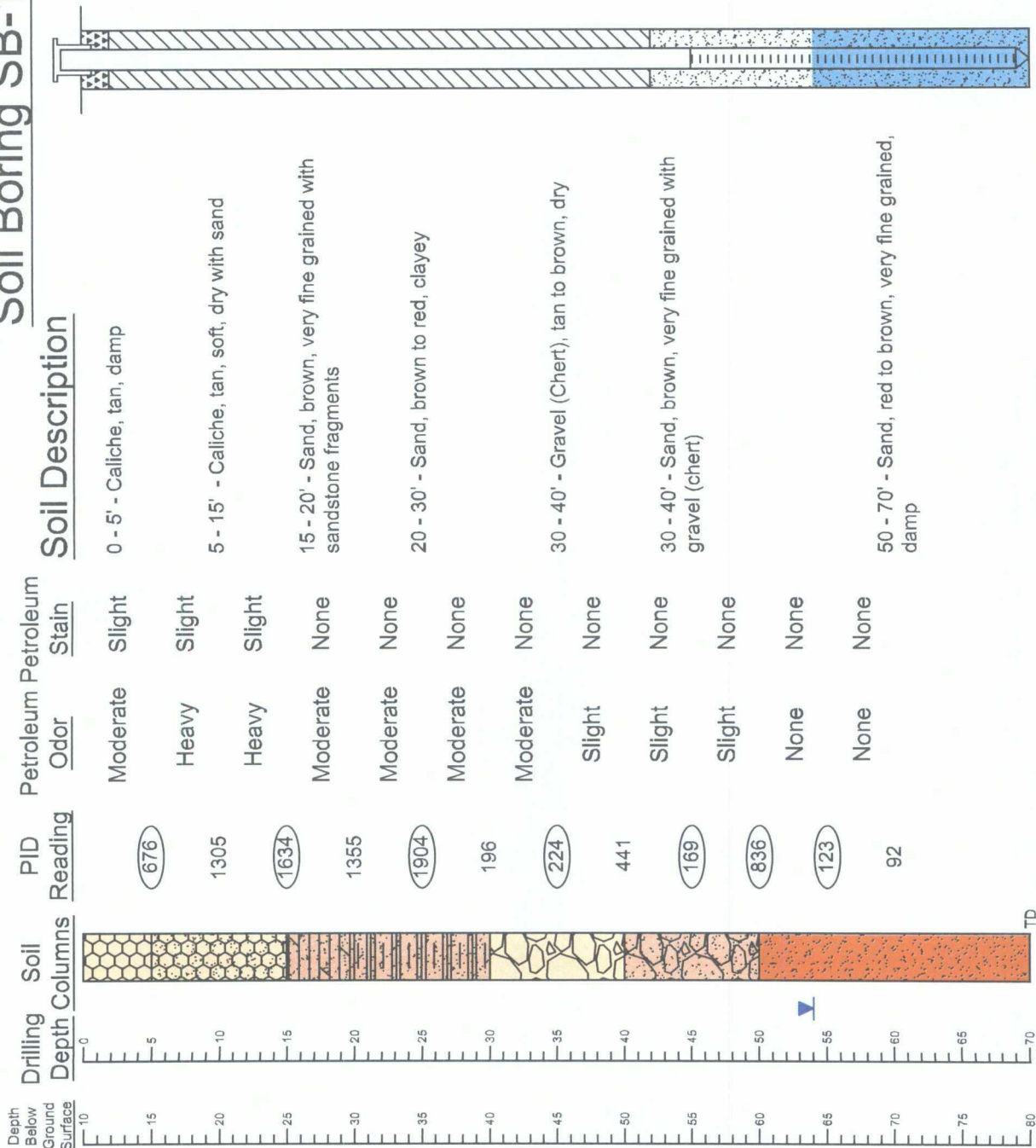
PLAINS PIPELINE, L.P.  
 14-INCH VAC TO JAL LEGACY  
 LEA COUNTY, NEW MEXICO  
 PLAINS SRS NO. 2009-092  
 NMOCD REFERENCE NO: 1R-2162

SAMPLE LOCATION	SAMPLE DATE	METHODS: EPA SW 846-8021B, 5030						CHLORIDES (mg/L)	TDS (mg/L)
		BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL-BENZENE (mg/L)	M,P-XYLENES (mg/L)	O-XYLENES (mg/L)	TOTAL BTEX (mg/L)		
Prelim GW (SB-2)	07/02/09	0.0063	0.0158	0.0054	0.007	0.0037	0.0382	10,200	19,700
Prelim GW (SB-3)	07/02/09	<0.0010	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	10,500	20,500
MW-1	07/06/09	<0.001	<0.0020	<0.0010	<0.0020	<0.0010	<0.0020	5,300	14,300
MW-1	10/21/09	0.0125	0.0049	<0.0010	<0.0020	<0.0010	0.0174	-	-
MW-1	03/11/10	0.072	0.0243	0.002	<0.0020	0.0017	0.1	-	-
MW-1	06/04/10	0.1407	0.0637	0.0047	0.0041	0.0026	0.2158	-	-
SB-4 GW	12/22/09	-	-	-	-	-	-	8,580	15,700
SB-5 GW	12/22/09	-	-	-	-	-	-	9,920	18,200
NMOCD CRITERIA		0.01	0.75	0.75	TOTAL XYLENES 0.62			250	10,000

# Appendices

**Appendix A**  
**Soil Boring and Monitor Well Logs**

# Soil Boring SB-1 / Monitor Well MW-1



Date Drilled July 1, 2009  
 Thickness of Bentonite Seal 42 Ft  
 Depth of Exploratory Boring 70 Ft  
 Depth to Groundwater Approximately 64 Ft bgs  
 Ground Water Elevation

- Indicates the PSH level measured on
- Indicates the groundwater level measured on
- Indicates samples selected for Laboratory Analysis.
- PID Head-space reading in ppm obtained with a photo-ionization detector.

- Grout Surface Seal
- Bentonite Pellet Seal
- Sand Pack
- Screen

## Completion Notes

- The monitor well was advanced on date using air rotary drilling techniques.
- The well was constructed with 4" ID, 0.010 inch factory slotted, threaded joint, schedule 40 PVC pipe.
- The well is protected with a locked stick up steel cover and compression cap.
- The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

Soil Boring Details  
 SB-1  
 Monitor Well Details  
 MW-1

14-Inch Vac to Jal - Legacy  
 Lea County, New Mexico  
 Plains Pipeline, L.P.

Basin Environmental Consulting

Prep By: CDS  
 August 4, 2009  
 Checked By: CDS

## Soil Description

Thickness of Bentonite Seal

### Depth of Exploratory Behavior

Depth to Groundwater Approach  
Ground Water Elevation

**V** Indicates the groundwater level measured on \_\_\_\_\_

**PID** Head-space reading in ppm obtained with a photo-ionization detector.

1.) The soil boring was advanced on date using air rotary drilling techniques.

2.) The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

14-Inch Vac to Jal - Legacy  
Lea County, New Mexico  
Plains Pipeline, L.P.

Pran Bv: CDS




Checked By: CDS

August 4, 2009






# Soil Boring SB-3

Date Drilled July 2, 2009  
 Thickness of Bentonite Seal 70 Ft  
 Depth of Exploratory Boring 70 Ft  
 Depth to Groundwater Approximately 64 Ft bgs  
 Ground Water Elevation \_\_\_\_\_

-  Indicates the PSH level measured on \_\_\_\_\_
-  Indicates the groundwater level measured on \_\_\_\_\_
-  Indicates samples selected for Laboratory Analysis.
- PID Head-space reading in ppm obtained with a photo-ionization detector.

## Notes

- 1.) The soil boring was advanced on date \_\_\_\_\_ using air rotary drilling techniques.
- 2.) The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

Depth Below Ground Surface	Soil Columns	PID Reading	Petroleum Stain		Soil Description
			Odor	Stain	
0		<u>1550</u>	Heavy	Heavy	0 - 5' - Caliche, tan, hard, dry
5		1465	Heavy	Heavy	5 - 10' - Sand, tan, dry with caliche nodules
10		<u>1128</u>	Heavy	Slight	10 - 20' - Sand, tan to white, dry with caliche nodules
15		1367	Heavy	Slight	
20		<u>1487</u>	Moderate	None	20 - 30' - Clay, brown, sandy with sandstone fragments, dry
25		381	Moderate	None	
30		<u>125</u>	Slight	None	30 - 35' - Clay, reddish brown, sandy, dry
35		87	None	None	
40		<u>75</u>	None	None	35 - 50' - Sand, reddish brown, dry with gravel
45		<u>85.6</u>	None	None	
50		<u>136</u>	None	None	
55		96.1	None	None	50 - 70' - Sand, reddish brown, damp with gravel
60		157	None	None	
65		84.4	None	None	
70					

Soil Boring Details  
SB-3

14-Inch Vac to Jal - Legacy  
 Lea County, New Mexico  
 Plains Pipeline, L.P.




Basin Environmental Consulting

Prep By: CDS  
 August 4, 2009  
 Checked By: CDS







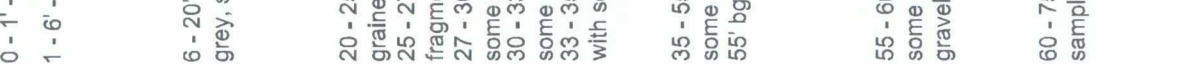
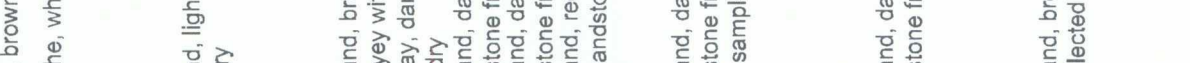
# Soil Boring SB-4

Date Drilled December 10, 2009  
 Thickness of Bentonite Seal 75 Ft  
 Depth of Exploratory Boring 75 Ft  
 Depth to Groundwater \_\_\_\_\_  
 Ground Water Elevation \_\_\_\_\_

-  Indicates the PSH level measured on \_\_\_\_\_  
 Indicates the groundwater level measured on \_\_\_\_\_  
 Indicates samples selected for Laboratory Analysis.  
 PID Head-space reading in ppm obtained with a photo-ionization detector.

## Notes

- 1.) The soil boring was advanced on date using air rotary drilling techniques.
- 2.) The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

Depth Below Ground Surface	Soil Columns	PID Reading	Petroleum Odor	Petroleum Stain	Soil Description
0		-	None	None	0 - 1' - Clay, brown, sandy with some white caliche
5		-	None	None	1 - 6' - Caliche, white to grey, sandy, soft, dry
10		-	None	None	6 - 20' - Sand, light brown and caliche, white to grey, soft, dry
15		-	None	None	20 - 25' - Sand, brown to dark brown, coarse grained, clayey with some sandstone fragments
20		-	None	None	25 - 27' - Clay, dark brown with some sandstone fragments, dry
25		-	None	None	27 - 30' - Sand, dark brown, very fine grained with some sandstone fragments, dry
30		-	None	None	30 - 33' - Sand, dark brown, very fine grained with some sandstone fragments and clayey, dry
35		-	None	None	33 - 35' - Sand, reddish brown, very fine grained with some sandstone fragments
40		-	None	None	35 - 55' - Sand, dark brown to reddish brown with some sandstone fragments, dry, Lost circulation at 55' bgs, No sample collected at 55' bgs
45		-	None	None	55 - 60' - Sand, dark brown to reddish brown with some sandstone fragments and some well rounded gravel, dry
50		-	None	None	60 - 75' - Sand, brown with some sandstone, No samples collected due to lost circulation, wet
55		-	None	None	
60					
65					
70					
75					

TD

Soil Boring Details  
SB-4

14-Inch Vac to Jal - Legacy  
Lea County, New Mexico  
Plains Pipeline, L.P.

Basin Environmental Consulting

Prep By: CDS

Checked By: CDS

May 5, 2010

Depth  
Below  
Ground  
Surface



Soil  
Columns  
PID  
Reading

Petroleum Odor	Petroleum Stain
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None
None	None

## Soil Description

0 - 23' - Caliche, white, and brown sand, dry

23 - 30' - Sand, brown, very fine grained with some sandstone fragments, dry

30 - 34' - Sand, brown, very fine grained with some sandstone fragments and some red to dark red clay

34 - 80' - Sand, brown, very fine grained with some sandstone fragments. Lost circulation at 45' bgs, No samples below 45' bgs

## Soil Boring SB-5

Date Drilled December 10, 2009  
Thickness of Bentonite Seal 80 Ft  
Depth of Exploratory Boring 80 Ft  
Depth to Groundwater  
Ground Water Elevation

Indicates the PSH level measured on  
Indicates the groundwater level measured on  
Indicates samples selected for Laboratory Analysis.  
PID  
Head-space reading in ppm obtained with a photo-ionization detector.

## Notes

- 1.) The soil boring was advanced on date using air rotary drilling techniques.
- 2.) The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

Soil Boring Details  
SB-5

14-Inch Vac to Jal - Legacy  
Lea County, New Mexico  
Plains Pipeline, L.P.

Basin Environmental Consulting

Prep By: CDS

Checked By: CDS

May 5, 2010

## **Appendix B**

# **Analytical Reports**

# **Analytical Report 330360**

**for**

## **PLAINS ALL AMERICAN EH&S**

**Project Manager: Jason Henry**

**14" Vacuum to Jal Lagacy**

**2009-092**

**20-APR-09**



**12600 West I-20 East Odessa, Texas 79765**

Texas certification numbers:

Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX

Florida certification numbers:

Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675

Miramar, FL E86349

Norcross(Atlanta), GA E87429

South Carolina certification numbers:

Norcross(Atlanta), GA 98015

North Carolina certification numbers:

Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Tampa - Miami - Latin America

Midland - Corpus Christi - Atlanta



20-APR-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **330360**  
**14" Vacuum to Jal Lagacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 330360. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 330360 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



**Sample Cross Reference 330360**



**PLAINS ALL AMERICAN EH&S, Midland, TX**

14" Vacuum to Jal Lagacy

**Sample Id**

**Matrix**

**Date Collected**

**Sample Depth**

**Lab Sample Id**

Chloride Baseline

S

Apr-15-09 15:00

330360-001



**Certificate of Analysis Summary 330360**  
**PLAINS ALL AMERICAN EH&S, Midland, TX**




**Project Id:** 2009-092  
**Contact:** Jason Henry  
**Project Location:** Lea County, NM

**Project Name:** 14" Vacuum to Jal Lagacy  
**Date Received in Lab:** Fri Apr-17-09 08:07 am  
**Report Date:** 20-APR-09  
**Project Manager:** Brent Barron, II

<b>Analysis Requested</b>	<b>Lab Id:</b>	330360-001				
	<b>Field Id:</b>	Chloride Baseline				
	<b>Depth:</b>					
	<b>Matrix:</b>	SOIL				
<b>Anions by EPA 300</b>	<b>Sampled:</b>	Apr-15-09 15:00				
	<b>Extracted:</b>					
	<b>Analyzed:</b>	Apr-17-09 14:47				
	<b>Units/RL:</b>	mg/kg RL				
<b>Percent Moisture</b>		796 10.3				
	<b>Extracted:</b>					
	<b>Analyzed:</b>	Apr-17-09 17:00				
	<b>Units/RL:</b>	% RL				
		3.28 1.00				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

\* Outside XENCO's scope of NELAC Accreditation.

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd , Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116





## Blank Spike Recovery



Project Name: 14" Vacuum to Jal Lagacy

Work Order #: 330360

Project ID:

2009-092

Lab Batch #: 756272

Sample: 756272-1-BKS

Matrix: Solid

Date Analyzed: 04/17/2009

Date Prepared: 04/17/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

### BLANK /BLANK SPIKE RECOVERY STUDY

Anions by EPA 300  Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	10.5	105	80-120	

Blank Spike Recovery [D] =  $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.



## Form 3 - MS Recoveries



Project Name: 14" Vacuum to Jal Legacy

Work Order #: 330360

Lab Batch #: 756272

Project ID: 2009-092

Date Analyzed: 04/17/2009

Date Prepared: 04/17/2009

Analyst: LATCOR

QC- Sample ID: 330360-001 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

### MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	796	207	939	69	80-120	X

Matrix Spike Percent Recovery [D] =  $100 \times (C-A)/B$

Relative Percent Difference [E] =  $200 \times (C-A)/(C+B)$

All Results are based on MDL and Validated for QC Purposes



## Sample Duplicate Recovery



Project Name: 14" Vacuum to Jal Lagacy

Work Order #: 330360

Lab Batch #: 756272

Project ID: 2009-092

Date Analyzed: 04/17/2009

Date Prepared: 04/17/2009

Analyst: LATCOR

QC- Sample ID: 330360-001 D

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	796	793	0	20	

Lab Batch #: 756187

Date Analyzed: 04/17/2009

Date Prepared: 04/17/2009

Analyst: BEV

QC- Sample ID: 330355-021 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	7.90	7.38	7	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
All Results are based on MDL and validated for QC purposes.

# Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST  
12600 West 120 East  
Odessa, Texas 79765  
Phone: 432-563-1869  
Fax: 432-563-1713

Project Manager: Curt Stanley  
Company Name: Basin Environmental Service Technologies, LLC  
Company Address: P.O. Box 301  
City/State/Zip: Lovington, NM 82760  
Telephone No: (505) 625-7210  
Fax No: (575) 396-1429  
Sample Signature: [Signature]  
e-mail: codstanley@basin-consulting.com  
Project Name: 14" Vacuum to Jal Lagacy  
Project #: 2009-092  
Project Loc: Les County, NM  
PO #: PAA - J. Henry  
Report Format: ☒ Standard ☐ TRRP ☐ NFDES

ORDER #	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Notes	Preservation & # of Containers	Notes	Analysis For	Standard TAT & DAY
330360	Chloride Baseline			04/15/09	1500		1	1	<input checked="" type="checkbox"/> TDS <input checked="" type="checkbox"/> Chloride E 300 <input checked="" type="checkbox"/> N.O.R.M. <input checked="" type="checkbox"/> R.O. <input checked="" type="checkbox"/> B.T.E. 80219-9030 or B.T.E. 80219-9030 <input checked="" type="checkbox"/> Synthesis <input checked="" type="checkbox"/> Volatiles <input checked="" type="checkbox"/> Metals: As, Ag, Ba, Cd, Cr, Pb, Hg, Se <input checked="" type="checkbox"/> SAR / ESR / CEC <input checked="" type="checkbox"/> Acids: (CL, SO <sub>4</sub> , Phosphate) <input checked="" type="checkbox"/> Cations: (Ca, Mg, Na, K) <input checked="" type="checkbox"/> TPH: TX 1005, TX 1006 <input checked="" type="checkbox"/> TPH: 410.1, 401.5M, 401.5B <input checked="" type="checkbox"/> BP - Non-Halogenated, Specialty Comp. <input checked="" type="checkbox"/> DW - Drinking Water 3 - 5000 <input checked="" type="checkbox"/> DW - Contaminant 5 - 50000 <input checked="" type="checkbox"/> Other (Specify)	<input checked="" type="checkbox"/> RUSH TAT (Per Schedule) 24, 48, 72 hrs <input checked="" type="checkbox"/> Standard TAT & DAY

Special Instructions: See 330360

Received by: [Signature] Date: 4/16/09 Time: 11:00  
 Received by: [Signature] Date: 4/17/09 Time: 08:07  
 Received by: [Signature] Date: 6/17/09 Time: 08:07

Temperature Upon Receipt: 25 °C

**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Plains / Basin  
Date/ Time: 01-17-09 @ 0807  
Lab ID #: 330360  
Initials: JMF

**Sample Receipt Checklist**

				Client Initials
#1	Temperature of container/ cooler?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	2.5 °C
#2	Shipping container in good condition?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	(Not Present)
#4	Custody Seals intact on sample bottles/ container? / (none)	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Present
#5	Chain of Custody present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	ID written on Cont./ Lid
#9	Container label(s) legible and intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Applicable
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#11	Containers supplied by ELDT?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#12	Samples in proper container/ bottle?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#13	Samples properly preserved?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#14	Sample bottles intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#15	Preservations documented on Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#16	Containers documented on Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#18	All samples received within sufficient hold time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#19	Subcontract of sample(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Applicable
#20	VOC samples have zero headspace?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Applicable

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# **Analytical Report 333087**

**for**

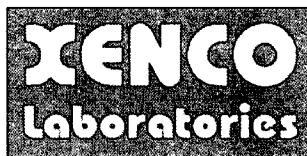
## **PLAINS ALL AMERICAN EH&S**

**Project Manager: Jason Henry**

**14" Vac to Jal Legacy**

**2009-92**

**29-MAY-09**



**12600 West I-20 East Odessa, Texas 79765**

Texas certification numbers:

Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX  
Corpus Christi, TX T104704370-08-TX - Dallas, TX T104704295-08-TX

Florida certification numbers:

Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675  
Miramar, FL E86349  
Norcross(Atlanta), GA E87429

South Carolina certification numbers:

Norcross(Atlanta), GA 98015

North Carolina certification numbers:

Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Tampa - Miami - Latin America  
Midland - Corpus Christi - Atlanta



29-MAY-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **333087**  
**14" Vac to Jal Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 333087. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 333087 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



## Sample Cross Reference 333087



PLAINS ALL AMERICAN EH&S, Midland, TX

14" Vac to Jal Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Stockpile # 1	S	May-18-09 14:30		333087-001
Stockpile # 2	S	May-18-09 14:40		333087-002
Main Exc. - NWSW	S	May-18-09 14:45		333087-003
Main Exc. - NESW	S	May-18-09 14:50		333087-004
Main Exc. - WSW	S	May-18-09 15:00		333087-005
Main Exc. - ESW	S	May-18-09 15:10		333087-006
Main Exc. Floor # 1	S	May-18-09 15:20		333087-007
Main Exc. Floor # 2	S	May-18-09 15:30		333087-008
Main Exc. Floor # 3	S	May-18-09 15:40		333087-009
Main Exc. Floor # 4	S	May-18-09 15:50		333087-010





## CASE NARRATIVE

**Client Name:** PLAINS ALL AMERICAN EH&S

**Project Name:** 14" Vac to Jal Legacy

**Project ID:** 2009-92

**Work Order Number:** 333087

**Report Date:** 29-MAY-09

**Date Received:** 05/19/2009

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-759451 Percent Moisture

None

Batch: LBA-759476 TPH by SW8015 Mod

SW8015MOD\_NM

Batch 759476, 1-Chlorooctane recovered above QC limits . Matrix interferences is suspected; data not confirmed by re-analysis

Samples affected are: 333087-010.

Batch: LBA-759977 BTEX-MTBE EPA 8021B

SW8021BM

Batch 759977, 1,4-Difluorobenzene recovered below QC limits . Matrix interferences is suspected; data not confirmed by re-analysis

Samples affected are: 333087-003,333087-008.

4-Bromofluorobenzene recovered below QC limits; QC Data not confirmed by re-analysis.

Samples affected are: 530571-1-BLK.

SW8021BM

Batch 759977, Benzene, Toluene recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate.

Samples affected are: 333087-003, -010, -008, -005, -007, -009, -004, -006.

The Laboratory Control Sample for Toluene, Benzene is within laboratory Control Limits



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14" Vac to Jal Legacy*

*Project ID: 2009-92*

*Work Order Number: 333087*

*Report Date: 29-MAY-09*

*Date Received: 05/19/2009*

---

*Batch: LBA-760298 BTEX-MTBE EPA 8021B  
SW8021BM*

*Batch 760298, 4-Bromofluorobenzene recovered below QC limits; QC Data not confirmed by re-analysis. Samples affected are: 530774-1-BLK.*

*SW8021BM*

*Batch 760298, Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.*

*Samples affected are: 333087-001.*

*The Laboratory Control Sample for Toluene, m,p-Xylenes, Benzene, Ethylbenzene, o-Xylene is within laboratory Control Limits*

*Batch: LBA-760452 BTEX-MTBE EPA 8021B  
BTEX by 8021B*

*760452, The Beginning and ending CCV for this batch was within QC limits, However, due to carry-over from an extremely contaminated sample immediately prior to it, the Middle CCV was above the QC limits. All Batch QC and sample surrogates were within QC limits, therefore this QC failure has negligible effect on this sample.*



# Certificate of Analysis Summary 333087

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-92  
Contact: Jason Henry  
Project Location: Lea County, NM

Date Received in Lab: Tue May-19-09 08:12 am  
Report Date: 29-MAY-09  
Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	333087-001	333087-002	333087-003	333087-004	333087-005	333087-006				
		Field Id: Depth: Matrix: Sampled:	Stockpile # 1  May-18-09 14:30	Stockpile # 2  May-18-09 14:40	Main Exc. - NWSW  May-18-09 14:45	SOIL  May-18-09 14:50	SOIL  May-18-09 15:00	SOIL  May-18-09 15:10				
BTEX by EPA 8021B		Extracted:	May-27-09 10:00	May-28-09 16:00	May-22-09 12:09	May-22-09 12:09	May-22-09 12:09	May-22-09 12:09				
		Analyzed:	May-27-09 13:18	May-28-09 16:28	May-22-09 19:03	May-22-09 19:24	May-22-09 19:46	May-22-09 20:07				
		Units/RL:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	RL			
			3.549	0.5545	23.20	2.187	0.0073	0.0010	0.0013	0.0011	ND	0.0010
			88.56	1.109	233.0	4.373	0.0354	0.0020	ND	0.0022	ND	0.0020
			63.06	0.5545	111.0	2.187	0.0158	0.0010	ND	0.0011	ND	0.0010
			88.09	1.109	165.8	4.373	0.0249	0.0020	ND	0.0022	ND	0.0020
			32.31	0.5545	12.40	2.187	0.0090	0.0010	ND	0.0011	ND	0.0010
			120.4	0.5545	178.2	2.187	0.0339	0.0010	ND	0.0011	ND	0.0010
			275.569	0.5545	545.4	2.187	0.0924	0.0010	0.0013	0.0011	ND	0.0010
Percent Moisture		Extracted:										
		Analyzed:	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59			
		Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL
			9.83	1.00	8.54	1.00	2.34	1.00	8.37	1.00	7.38	1.00
			May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58
			May-19-09 15:59	May-19-09 16:24	May-19-09 16:49	May-19-09 17:14	May-19-09 17:39	May-19-09 17:39	May-19-09 17:39	May-19-09 17:39	May-19-09 17:39	May-19-09 17:39
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			RL	RL	RL	RL	RL	RL	RL	RL	RL	RL
			3990	333	8260	164	18.0	15.4	ND	16.2	ND	15.4
			4890	333	9340	164	18.1	15.4	43.3	16.4	ND	15.4
			ND	333	669	164	ND	15.4	ND	16.4	ND	15.4
			8880	333	18269	164	36.1	15.4	43.3	16.4	ND	16.2



# Certificate of Analysis Summary 333087

## PLAINS ALL AMERICAN EH&S, Midland, TX




Project Id: 2009-92      Date Received in Lab: Tue May-19-09 08:12 am  
Contact: Jason Henry      Report Date: 29-MAY-09  
Project Location: Lea County, NM      Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	333087-007	333087-008	333087-009	333087-010
		Field Id:	Main Exc. Floor # 1	Main Exc. Floor # 2	Main Exc. Floor # 3	Main Exc. Floor # 4
		Depth:				
		Matrix:	SOIL	SOIL	SOIL	SOIL
		Sampled:	May-18-09 15:20	May-18-09 15:30	May-18-09 15:40	May-18-09 15:50
BTEx by EPA 8021B	Extracted:	May-22-09 12:09	May-22-09 12:09	May-22-09 12:09	May-22-09 12:09	May-22-09 12:09
	Analyzed:	May-22-09 21:11	May-22-09 17:58	May-22-09 21:33	May-22-09 18:19	May-22-09 18:19
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
		0.0013 0.0010	ND 2.397	0.0022 0.0010	9.459 0.5842	
		0.0033 0.0021	26.82 4.793	0.0071 0.0020	106.7 1.168	
Percent Moisture			ND 0.0010	0.0013 0.0010	84.72 0.5842	
			ND 0.0021	71.76 4.793	ND 0.0020	123.0 1.168
			ND 0.0010	27.42 2.397	ND 0.0010	47.24 0.5842
			ND 0.0010	99.18 2.397	ND 0.0010	170.24 0.5842
			0.0046 0.0010	167.51 2.397	0.0106 0.0010	371.119 0.5842
TPH By SW8015 Mod	Extracted:	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59	May-20-09 08:59
	Analyzed:	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58	May-19-09 12:58
	Units/RL:	% RL	% RL	% RL	% RL	% RL
		2.77 1.00	16.55 1.00	ND 1.00	14.42 1.00	
Total TPH			May-19-09 18:29	May-19-09 18:54	May-19-09 19:44	May-19-09 20:09
			mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
			ND 15.4	4460 359	50.9 15.1	4970 175
			19.8 15.4	7640 359	1460 15.1	7740 175
			ND 15.4	ND 359	95.4 15.1	523 175

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end user of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990    Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd , Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 759977

Sample: 530571-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/22/09 14:44

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0297	0.0300	99	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

Lab Batch #: 759977

Sample: 530571-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/22/09 15:06

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0297	0.0300	99	80-120	
4-Bromofluorobenzene	0.0339	0.0300	113	80-120	

Lab Batch #: 759977

Sample: 530571-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/22/09 15:49

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0253	0.0300	84	80-120	
4-Bromofluorobenzene	0.0230	0.0300	77	80-120	*

Lab Batch #: 759977

Sample: 333087-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 17:58

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0233	0.0300	78	80-120	*
4-Bromofluorobenzene	0.0377	0.0300	126	80-120	*

Lab Batch #: 759977

Sample: 333087-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 18:19

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0249	0.0300	83	80-120	
4-Bromofluorobenzene	0.0416	0.0300	139	80-120	*

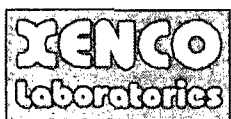
\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy



Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 759977

Sample: 333087-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 19:03

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0237	0.0300	79	80-120	*
4-Bromofluorobenzene	0.0337	0.0300	112	80-120	

Lab Batch #: 759977

Sample: 333087-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 19:24

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0245	0.0300	82	80-120	
4-Bromofluorobenzene	0.0343	0.0300	114	80-120	

Lab Batch #: 759977

Sample: 333087-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 19:46

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0243	0.0300	81	80-120	
4-Bromofluorobenzene	0.0332	0.0300	111	80-120	



Lab Batch #: 759977

Sample: 333087-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 20:07

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0246	0.0300	82	80-120	
4-Bromofluorobenzene	0.0303	0.0300	101	80-120	

Lab Batch #: 759977

Sample: 333087-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 21:11

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0255	0.0300	85	80-120	

\* Surrogate outside of Laboratory QC limits

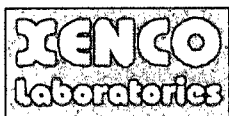
\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy



Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 759977

Sample: 333087-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/22/09 21:33

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0240	0.0300	80	80-120	
4-Bromofluorobenzene	0.0353	0.0300	118	80-120	

Lab Batch #: 759977

Sample: 333087-003 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/23/09 00:45

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0260	0.0300	87	80-120	
4-Bromofluorobenzene	0.0345	0.0300	115	80-120	

Lab Batch #: 759977

Sample: 333087-003 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/23/09 01:07

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0256	0.0300	85	80-120	
4-Bromofluorobenzene	0.0333	0.0300	111	80-120	

Lab Batch #: 760298

Sample: 530774-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/27/09 10:23

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0332	0.0300	111	80-120	
4-Bromofluorobenzene	0.0242	0.0300	81	80-120	

Lab Batch #: 760298

Sample: 530774-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/27/09 10:44

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0331	0.0300	110	80-120	
4-Bromofluorobenzene	0.0251	0.0300	84	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.







## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 760298

Sample: 530774-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/27/09 11:27

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0283	0.0300	94	80-120	
4-Bromofluorobenzene	0.0164	0.0300	55	80-120	*

Lab Batch #: 760298

Sample: 333087-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/27/09 13:18

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0264	0.0300	88	80-120	
4-Bromofluorobenzene	0.0281	0.0300	94	80-120	

Lab Batch #: 760298

Sample: 333233-020 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/27/09 19:45

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0323	0.0300	108	80-120	
4-Bromofluorobenzene	0.0291	0.0300	97	80-120	

Lab Batch #: 760298

Sample: 333233-020 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/27/09 20:07

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0326	0.0300	109	80-120	
4-Bromofluorobenzene	0.0291	0.0300	97	80-120	

Lab Batch #: 760452

Sample: 530869-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/28/09 13:01

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0318	0.0300	106	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 760452

Sample: 530869-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/28/09 13:22

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0298	0.0300	99	80-120	
4-Bromofluorobenzene	0.0308	0.0300	103	80-120	

Lab Batch #: 760452

Sample: 530869-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/28/09 14:05

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0262	0.0300	87	80-120	
4-Bromofluorobenzene	0.0248	0.0300	83	80-120	

Lab Batch #: 760452

Sample: 333087-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/28/09 16:28

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0261	0.0300	87	80-120	
4-Bromofluorobenzene	0.0313	0.0300	104	80-120	

Lab Batch #: 759476

Sample: 530300-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/19/09 13:56

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	103	100	103	70-135	
o-Terphenyl	45.8	50.0	92	70-135	

Lab Batch #: 759476

Sample: 530300-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/19/09 14:20

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	46.0	50.0	92	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 759476

Sample: 530300-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/19/09 14:45

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	91.9	100	92	70-135	
o-Terphenyl	52.3	50.0	105	70-135	

Lab Batch #: 759476

Sample: 333087-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 15:59

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	119	100	119	70-135	
o-Terphenyl	48.6	50.0	97	70-135	

Lab Batch #: 759476

Sample: 333087-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 16:24

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	127	100	127	70-135	
o-Terphenyl	52.7	50.0	105	70-135	

Lab Batch #: 759476

Sample: 333087-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 16:49

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	88.6	100	89	70-135	
o-Terphenyl	49.7	50.0	99	70-135	

Lab Batch #: 759476

Sample: 333087-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 17:14

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	86.3	100	86	70-135	
o-Terphenyl	49.1	50.0	98	70-135	

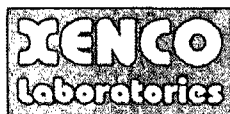
\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 759476

Sample: 333087-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 17:39

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	90.2	100	90	70-135	
o-Terphenyl	50.9	50.0	102	70-135	

Lab Batch #: 759476

Sample: 333087-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 18:04

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	59.2	50.0	118	70-135	

Lab Batch #: 759476

Sample: 333087-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 18:29

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	90.6	100	91	70-135	
o-Terphenyl	50.7	50.0	101	70-135	

Lab Batch #: 759476

Sample: 333087-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 18:54

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	46.4	50.0	93	70-135	

Lab Batch #: 759476

Sample: 333087-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 19:44

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	89.3	100	89	70-135	
o-Terphenyl	49.7	50.0	99	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 333087,

Project ID: 2009-92

Lab Batch #: 759476

Sample: 333087-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 20:09

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	140	100	140	70-135	*
o-Terphenyl	53.8	50.0	108	70-135	

Lab Batch #: 759476

Sample: 333087-005 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/19/09 23:53

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	49.2	50.0	98	70-135	

Lab Batch #: 759476

Sample: 333087-005 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/20/09 00:18

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	108	100	108	70-135	
o-Terphenyl	49.2	50.0	98	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## BS / BSD Recoveries



Project Name: 14" Vac to Jal Legacy

Work Order #: 333087

Analyst: BRB

Lab Batch ID: 759977

Sample: 530571-1-BKS

Date Prepared: 05/22/2009

Batch #: 1

Project ID: 2009-92

Date Analyzed: 05/22/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
BTEX by EPA 8021B		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
Benzene		ND	0.1000	0.1183	118	0.1	0.1172	117	1	70-130	35	
Toluene		ND	0.1000	0.1143	114	0.1	0.1132	113	1	70-130	35	
Ethylbenzene		ND	0.1000	0.1190	119	0.1	0.1181	118	1	71-129	35	
m,p-Xylenes		ND	0.2000	0.2396	120	0.2	0.2368	118	1	70-135	35	
o-Xylene		ND	0.1000	0.1148	115	0.1	0.1140	114	1	71-133	35	

Analyst: ASA

Lab Batch ID: 760298

Sample: 530774-1-BKS

Date Prepared: 05/27/2009

Batch #: 1

Date Analyzed: 05/27/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY													
Units: mg/kg	BTEX by EPA 8021B	Analytes	Blank Sample Result	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate Result	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
			[A]	[B]	[C]	[D]	[E]	[F]	[G]				
			ND	0.1000	0.1000	100	0.1	0.1002	100	0	70-130	35	
			ND	0.1000	0.0963	96	0.1	0.0968	97	1	70-130	35	
			ND	0.1000	0.1030	103	0.1	0.1046	105	2	71-129	35	
			ND	0.2000	0.2083	104	0.2	0.2113	106	1	70-135	35	
			ND	0.1000	0.0985	99	0.1	0.1001	100	2	71-133	35	
			o-Xylene										

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



## BS / BSD Recoveries



Project Name: 14" Vac to Jal Legacy

Work Order #: 333087

Analyst: BRB

Lab Batch ID: 760452

Sample: 530869-1-BKS

Date Prepared: 05/28/2009

Batch #: 1

Project ID: 2009-92

Date Analyzed: 05/28/2009

Matrix: Solid

Units: mg/kg

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0958	96	0.1	0.0944	94	1	70-130	35
	Toluene	ND	0.1000	0.0931	93	0.1	0.0922	92	1	70-130	35
	Ethylbenzene	ND	0.1000	0.0987	99	0.1	0.0973	97	1	71-129	35
	m,p-Xylenes	ND	0.2000	0.2007	100	0.2	0.1975	99	2	70-135	35
	o-Xylene	ND	0.1000	0.0952	95	0.1	0.0940	94	1	71-133	35

Analyst: BHW

Lab Batch ID: 759476

Sample: 530300-1-BKS

Date Prepared: 05/19/2009

Batch #: 1

Date Analyzed: 05/19/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Units: mg/kg											
Analytes	TPH By SW8015 Mod										
	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	ND	1000	1010	101	1000	990	99	2	70-135	35	
C12-C28 Diesel Range Hydrocarbons	ND	1000	964	96	1000	954	95	1	70-135	35	

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



# Form 3 - MSD Recoveries

Project Name: 14" Vac to Jal Legacy



Work Order #: 333087

Lab Batch ID: 759977

Date Analyzed: 05/23/2009

Reporting Units: mg/kg

Project ID: 2009-92

QC- Sample ID: 333087-003 S

Batch #: 1 Matrix: Soil

Date Prepared: 05/22/2009

Analyst: BRB

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spiked Sample Result [F]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Benzene	0.0073	0.1024	0.2245	212	0.1024	0.2088	197	7	70-130	35	X
	Toluene	0.0354	0.1024	0.3688	326	0.1024	0.3445	302	7	70-130	35	X
	Ethylbenzene	0.0158	0.1024	0.1478	129	0.1024	0.1382	120	7	71-129	35	
	m,p-Xylenes	0.0249	0.2048	0.2332	102	0.2048	0.2213	96	5	70-135	35	
	o-Xylene	0.0090	0.1024	0.1041	93	0.1024	0.0991	88	5	71-133	35	

Lab Batch ID: 760298

Date Analyzed: 05/27/2009

Reporting Units: mg/kg

QC- Sample ID: 333233-020 S

Batch #: 1 Matrix: Soil

Date Prepared: 05/27/2009

Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spiked Sample Result [F]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
BTEX by EPA 8021B											
Analytes											
Benzene	ND	0.1092	0.0619	57	0.1092	0.0656	60	6	70-130	35	X
Toluene	ND	0.1092	0.0606	55	0.1092	0.0644	59	6	70-130	35	X
Ethylbenzene	ND	0.1092	0.0677	62	0.1092	0.0720	66	6	71-129	35	X
m,p-Xylenes	ND	0.2183	0.1392	64	0.2183	0.1474	68	6	70-135	35	X
o-Xylene	ND	0.1092	0.0628	58	0.1092	0.0671	61	7	71-133	35	X

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times [(C-F)/(C+F)]$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit





# Form 3 - MSD Recoveries

Project Name: 14" Vac to Jal Legacy



Work Order #: 333087

Lab Batch ID: 759476

Date Analyzed: 05/19/2009

Reporting Units: mg/kg

Project ID: 2009-92

QC- Sample ID: 333087-005 S

Batch #: 1 Matrix: Soil

Date Prepared: 05/19/2009

Analyst: BHW

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
Reporting Units: mg/kg	TPH By SW8015 Mod	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes											
	C6-C12 Gasoline Range Hydrocarbons	ND	1080	1150	106	1080	1160	107	1	70-135	35	
	C12-C28 Diesel Range Hydrocarbons	ND	1080	1100	102	1080	1120	104	2	70-135	35	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times (C-F)/(C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQ = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$



## Sample Duplicate Recovery



Project Name: 14" Vac to Jal Legacy

Work Order #: 333087

Lab Batch #: 759451

Project ID: 2009-92

Date Analyzed: 05/20/2009

Date Prepared: 05/20/2009

Analyst: BEV

QC- Sample ID: 333088-001 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	ND	ND	NC	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

**CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST**  
 12500 West 1-20 East  
 Odessa, Texas 79765  
 Phone: 432-562-1800  
 Fax: 432-563-1713

Gamille Bryant  
Besin Environmental Consulting LLC  
Signed True: \_\_\_\_\_

Basin Environmental Consulting, Inc.

P.O. Box 397

Levington, NM 88260

Fax No: (505) 395-1429

e-mail: [cibryant@b...](mailto:cibryant@b...)

Preservation

[illegible]

**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Basin / Plains  
Date/ Time: 05/19/09 8:12  
Lab ID #: 533087  
Initials: Quik

**Sample Receipt Checklist**

				Client Initials	
#1	Temperature of container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	1.5	°C
#2	Shipping container in good condition?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	(Not Present)	
#4	Custody Seals intact on sample bottles/ container?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Present	
#5	Chain of Custody present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	ID written on Cont / Lid	
#9	Container label(s) legible and intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#11	Containers supplied by ELOT?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#12	Samples in proper container/ bottle?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#13	Samples properly preserved?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#14	Sample bottles intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#15	Preservations documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#16	Containers documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#18	All samples received within sufficient hold time?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#19	Subcontract of sample(s)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	
#20	VOC samples have zero headspace?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# **Analytical Report 333729**

**for**

## **PLAINS ALL AMERICAN EH&S**

**Project Manager: Jason Henry**

**14-Inch Vac to Jal - Legacy**

**2009-092**

**03-JUN-09**



**12600 West I-20 East Odessa, Texas 79765**

**Texas certification numbers:**

**Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX  
Corpus Christi, TX T104704370-08-TX - Dallas, TX T104704295-08-TX**

**Florida certification numbers:**

**Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675  
Miramar, FL E86349  
Norcross(Atlanta), GA E87429**

**South Carolina certification numbers:**

**Norcross(Atlanta), GA 98015**

**North Carolina certification numbers:**

**Norcross(Atlanta), GA 483**

**Houston - Dallas - San Antonio - Tampa - Miami - Latin America  
Midland - Corpus Christi - Atlanta**



03-JUN-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **333729**  
**14-Inch Vac to Jal - Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 333729. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 333729 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



## Sample Cross Reference 333729



### PLAINS ALL AMERICAN EH&S, Midland, TX

14-Inch Vac to Jal - Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
T-1 @ 10' bgs	S	May-26-09 10:00		333729-001
T-2 @ 12' bgs	S	May-26-09 10:05		333729-002
T-2 @ 14' bgs	S	May-26-09 10:10		333729-003
T-2 @ 18' bgs	S	May-26-09 10:20		333729-004
T-3 @ 12' bgs	S	May-26-09 10:30		333729-005
T-3 @ 14' bgs	S	May-26-09 10:40		333729-006
T-3 @ 18' bgs	S	May-26-09 10:50		333729-007
T-3 @ 22' bgs	S	May-26-09 11:00		333729-008
T-3 @ 26' bgs	S	May-26-09 11:10		333729-009
T-3 @ 30' bgs	S	May-26-09 11:20		333729-010
T-4 @ 12' bgs	S	May-26-09 11:30		333729-011
T-4 @ 14' bgs	S	May-26-09 11:40		333729-012
T-4 @ 18' bgs	S	May-26-09 11:50		333729-013
T-4 @ 22' bgs	S	May-26-09 12:00		333729-014
T-4 @ 26' bgs	S	May-26-09 12:10		333729-015
T-4 @ 30' bgs	S	May-26-09 12:20		333729-016
T-5 @ 14' bgs	S	May-26-09 12:30		333729-017
T-6 @ 10' bgs	S	May-26-09 12:40		333729-018
T-6 @ 14' bgs	S	May-26-09 12:50		333729-019
T-6 @ 18' bgs	S	May-26-09 13:00		333729-020
T-7 @ 10' bgs	S	May-26-09 13:10		333729-021
T-7 @ 14' bgs	S	May-26-09 13:20		333729-022
T-7 @ 18' bgs	S	May-26-09 13:30		333729-023
T-8 @ 10' bgs	S	May-26-09 13:40		333729-024
T-8 @ 14' bgs	S	May-26-09 13:50		333729-025
T-9 @ 10' bgs	S	May-26-09 14:00		333729-026
T-9 @ 14' bgs	S	May-26-09 14:10		333729-027



## CASE NARRATIVE

**Client Name:** PLAINS ALL AMERICAN EH&S

**Project Name:** 14-Inch Vac to Jal - Legacy

**Project ID:** 2009-092  
**Work Order Number:** 333729

**Report Date:** 03-JUN-09  
**Date Received:** 05/27/2009

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-760246 Percent Moisture  
None

Batch: LBA-760247 Percent Moisture  
None

Batch: LBA-760705 BTEX-MTBE EPA 8021B  
SW8021BM

Batch 760705, 1,4-Difluorobenzene recovered below QC limits . Matrix interferences is suspected; data confirmed by re-analysis

Samples affected are: 333729-005,333729-007.

4-Bromofluorobenzene recovered below QC limits. Matrix Interference is suspected. Sample Data confirmed by re-analysis. Samples affected are: 530985-1-BLK,333729-017,333729-010,333729-001. QC data not confirmed by reanalysis.

Batch: LBA-760797 BTEX-MTBE EPA 8021B  
SW8021BM

Batch 760797, 1,4-Difluorobenzene recovered below QC limits . Matrix interferences is suspected; data confirmed by re-analysis

Samples affected are: 333729-023,333729-021,333729-022.

4-Bromofluorobenzene recovered below QC limits Data confirmed by re-analysis. Samples affected are: 531040-1-BLK,333729-024,333729-019,333729-025. QC data is not confirmed by reanalysis.

SW8021BM

Batch 760797, Ethylbenzene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.

Samples affected are: 333729-025, -026, -021, -022, -019, -023, -020, -024, -027.

The Laboratory Control Sample for Ethylbenzene is within laboratory Control Limits





## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal - Legacy*

*Project ID: 2009-092*

*Work Order Number: 333729*

*Report Date: 03-JUN-09*

*Date Received: 05/27/2009*

---

*Batch: LBA-760837 TPH by SW8015 Mod  
None*

*Batch: LBA-760842 TPH by SW8015 Mod  
None*

*Batch: LBA-760926 BTEX-MTBE EPA 8021B  
SW8021BM*

*Batch 760926, 4-Bromofluorobenzene recovered below QC limits; QC Data not confirmed by re-analysis. Samples affected are: 531104-1-BLK.*

*SW8021BM*

*Batch 760926, Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. This failure is most likely due to matrix interference with the sample chosen for MS/MSD analysis.*

*Samples affected are: 333729-016, -011, -013, -003, -002.*

*The Laboratory Control Sample for Toluene, m,p-Xylenes, Benzene, Ethylbenzene, o-Xylene is within laboratory Control Limits*



**Project Name: 14-Inch Vac to Jal - Legacy**

**Project Location:** Lea County, NM

**Date Received in Lab:** Wed May-27-09 08:34 am

Report Date: 03-JUN-09

**Project Manager:** Brent Barron, II

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Your liability is limited to the amount invoiced for this work, order unless otherwise agreed to in writing.

Since 1990      Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



**Certificate of Analysis Summary 333729**  
**PLAINS ALL AMERICAN EH&S, Midland, TX**  
Project Name: 14-Inch Vac to Jal - Legacy



Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea County, NM

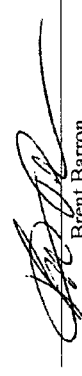
Date Received in Lab: Wed May-27-09 08:34 am  
Report Date: 03-JUN-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	333729-001	333729-002	333729-003	333729-004	333729-005	333729-006
	Field Id:	Depth:	Matrix:	Sampled:	Extracted:	Analyzed:	Units/RL:	%	RL	%	RL
Percent Moisture											
Percent Moisture											

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



**Project Name: 14-Inch Vac to Jal - Legacy**

**Project Location:** Lea County, NM


**Date Received in Lab:** Wed May-27-09 08:34 am

Report Date: 03-JUN-09

**Project Manager:** Brent Barron, II

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work, order unless otherwise agreed to in writing.

Since 1990  
Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



# Certificate of Analysis Summary 333729

## PLAINS ALL AMERICAN EH&S, Midland, TX




Project Name: 14-Inch Vac to Jal - Legacy  
Date Received in Lab: Wed May-27-09 08:34 am  
Report Date: 03-JUN-09  
Project Manager: Brent Barron, II

Project Location: Lea County, NM

Analysis Requested	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	333729-007	333729-008	333729-009	333729-010	333729-011	333729-012
	Extracted:	Analyzed:	Units/RL:	%	RL	May-26-09 10:50	May-26-09 11:00	May-26-09 11:10	May-26-09 11:20	May-26-09 11:30	May-26-09 11:40
Percent Moisture						12.39	19.12	17.55	7.39	17.52	22.36
						1.00	1.00	1.00	1.00	1.00	1.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



# Certificate of Analysis Summary 333729

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Project Name: 14-Inch Vac to Jal - Legacy

Date Received in Lab: Wed May-27-09 08:34 am


Report Date: 03-JUN-09

Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	333729-013	333729-014	333729-015	333729-016	333729-017	333729-018
							T-4 @ 18' bgs	T-4 @ 22' bgs	T-4 @ 26' bgs	T-4 @ 30' bgs	T-5 @ 14' bgs	T-6 @ 10' bgs
							SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
							May-26-09 11:50	May-26-09 12:00	May-26-09 12:10	May-26-09 12:20	May-26-09 12:30	May-26-09 12:40
BTEX by EPA 8021B		Extracted:	Jun-01-09 16:30	May-30-09 11:00	May-30-09 11:00	May-30-09 11:00	Jun-02-09 13:08	May-31-09 22:46	May-30-09 11:00	Jun-01-09 16:30	May-30-09 11:00	May-30-09 11:00
		Analyzed:	Jun-02-09 13:08	May-31-09 22:46	May-31-09 22:46	May-31-09 23:07	Jun-02-09 13:08	May-31-09 22:46	May-31-09 23:07	Jun-02-09 13:50	May-31-09 17:46	May-31-09 23:50
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene			29.02 6.241	20.63 1.178	20.63 1.178	31.62 1.129	213.1 2.258	213.1 2.258	23.12 5.694	230.2 11.39	0.0078 0.0012	1.999 1.234
Toluene			277.2 12.48	163.3 2.356	163.3 2.356	213.1 2.258	213.1 2.258	213.1 2.258	230.2 11.39	230.2 11.39	0.0041 0.0025	20.67 2.468
Ethylbenzene			142.5 6.241	80.59 1.178	80.59 1.178	111.0 1.129	111.0 1.129	111.0 1.129	143.0 5.694	143.0 5.694	ND 0.0012	21.20 1.234
m,p-Xylenes			215.4 12.48	111.1 2.356	111.1 2.356	158.5 2.258	158.5 2.258	158.5 2.258	214.8 11.39	214.8 11.39	ND 0.0025	32.80 2.468
o-Xylene			73.52 6.241	39.38 1.178	39.38 1.178	55.50 1.129	55.50 1.129	55.50 1.129	74.02 5.694	74.02 5.694	ND 0.0012	12.43 1.234
Total Xylenes			288.92 6.241	150.48 1.178	150.48 1.178	214 1.129	214 1.129	214 1.129	288.82 5.694	288.82 5.694	ND 0.0012	45.23 1.234
Total BTEX			737.64 6.241	415 1.178	415 1.178	569.72 1.129	569.72 1.129	569.72 1.129	705.14 5.694	705.14 5.694	0.0119 0.0012	89.099 1.234
TPH By SW8015 Mod		Extracted:	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07
		Analyzed:	Jun-01-09 19:49	Jun-01-09 20:14	Jun-01-09 20:14	Jun-01-09 20:39	Jun-01-09 20:39	Jun-01-09 20:39	Jun-01-09 21:04	Jun-01-09 21:04	Jun-01-09 21:28	Jun-01-09 21:53
		Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C12 Gasoline Range Hydrocarbons			9680 188	8240 177	8240 177	5040 170	7900 170	7900 170	7750 343	7750 343	ND 18.6	1080 92.6
C12-C28 Diesel Range Hydrocarbons			14200 188	13700 177	13700 177	7900 170	7900 170	7900 170	11000 343	11000 343	32.0 18.6	2620 92.6
C28-C35 Oil Range Hydrocarbons			1340 188	1130 177	1130 177	853 170	853 170	853 170	1290 343	1290 343	ND 18.6	296 92.6
Total TPH			25220 188	23070 177	23070 177	13793 170	13793 170	13793 170	20040 343	20040 343	32 18.6	3996 92.6

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end user of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



# Certificate of Analysis Summary 333729

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Name: 14-Inch Vac to Jal - Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Wed May-27-09 08:34 am


Report Date: 03-JUN-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	333729-013	333729-014	333729-015	333729-016	333729-017	333729-018
	Extracted:	Analyzed:	Units/RL:								
Percent Moisture						T-4 @ 18' bgs	T-4 @ 22' bgs	T-4 @ 26' bgs	T-4 @ 30' bgs	T-5 @ 14' bgs	T-6 @ 10' bgs
						SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						May-26-09 11:50	May-26-09 12:00	May-26-09 12:10	May-26-09 12:20	May-26-09 12:30	May-26-09 12:40
						20.20	15.11	11.76	12.54	19.36	18.97
						RL 1.00	RL 1.00	RL 1.00	RL 1.00	RL 1.00	RL 1.00
						May-28-09 08:46	May-28-09 08:46	May-28-09 08:46	May-28-09 08:46	May-28-09 08:46	May-28-09 08:46
						%	%	%	%	%	%

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work, order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



# Certificate of Analysis Summary 333729

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Name: 14-Inch Vac to Jal - Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Wed May-27-09 08:34 am

Report Date: 03-JUN-09

Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	Field Id:	Depth:	Matrix:	Sampled:	333729-019	333729-020	333729-021	333729-022	333729-023	333729-024
							T-6 @ 14' bgs	T-6 @ 18' bgs	T-7 @ 10' bgs	T-7 @ 14' bgs	T-7 @ 18' bgs	T-8 @ 10' bgs
							SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
							May-26-09 12:50	May-26-09 13:00	May-26-09 13:10	May-26-09 13:20	May-26-09 13:30	May-26-09 13:40
BTEX by EPA 8021B		Extracted:	Jun-01-09 08:00	Jun-01-09 08:00	Jun-01-09 08:00	Jun-01-09 08:00	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Analyzed:	Jun-01-09 10:55	Jun-01-09 11:17	Jun-01-09 11:17	Jun-01-09 13:04	RL	RL	RL	RL	RL	RL
		Units/RL:	0.0013	0.0013	0.0012	0.0013	9.257	1.137	5.998	1.190	1.200	ND
Benzene			0.0053	0.0025	0.0042	0.0024	56.21	2.274	62.42	2.380	33.32	2.400
Toluene			0.0015	0.0013	0.0018	0.0012	35.25	1.137	46.94	1.190	37.70	1.200
Ethylbenzene			ND	0.0025	ND	0.0024	54.67	2.274	71.87	2.380	59.77	2.400
m,p-Xylenes			ND	0.0013	ND	0.0012	19.97	1.137	25.59	1.190	22.55	1.200
o-Xylene			ND	0.0013	ND	0.0012	74.64	1.137	97.46	1.190	82.32	1.200
Total Xylenes			0.0081	0.0013	0.006	0.0012	175.357	1.137	212.818	1.190	153.34	1.200
Total BTEX												
TPH By SW8015 Mod		Extracted:	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 11:07	Jun-01-09 12:14	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Analyzed:	Jun-01-09 22:18	Jun-01-09 22:43	Jun-01-09 22:43	Jun-01-09 13:33	RL	RL	RL	RL	RL	RL
		Units/RL:	ND	18.9	ND	18.3	3460	344	3170	360	3190	360
C6-C12 Gasoline Range Hydrocarbons			28.3	18.9	66.6	18.3	5480	344	5270	360	5010	360
C12-C28 Diesel Range Hydrocarbons			ND	18.9	ND	18.3	900	344	799	360	861	360
C28-C35 Oil Range Hydrocarbons			28.3	18.9	66.6	18.3	9840	344	9239	360	9061	360
Total TPH												

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director





# Certificate of Analysis Summary 333729

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Name: 14-Inch Vac to Jal - Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Wed May-27-09 08:34 am

Report Date: 03-JUN-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	333729-019	333729-020	333729-021	333729-022	333729-023	333729-024
	Field Id:	T-6 @ 14' bgs	T-6 @ 18' bgs	T-7 @ 10' bgs	T-7 @ 14' bgs	T-7 @ 18' bgs	T-8 @ 10' bgs
Percent Moisture	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Percent Moisture	Sampled:	May-26-09 12:50	May-26-09 13:00	May-26-09 13:10	May-26-09 13:20	May-26-09 13:30	May-26-09 13:40
	Extracted:						
Percent Moisture	Analyzed:	May-28-09 08:46	May-28-09 08:46	May-28-09 08:54	May-28-09 08:54	May-28-09 08:54	May-28-09 08:54
	Units/RL:	% RL	% RL	% RL	% RL	% RL	% RL
Percent Moisture		20.72 1.00	18.18 1.00	12.76 1.00	16.64 1.00	16.68 1.00	11.94 1.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



**Certificate of Analysis Summary 333729**  
**PLAINS ALL AMERICAN EH&S, Midland, TX**



Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea County, NM

Date Received in Lab: Wed May-27-09 08:34 am  
Report Date: 03-JUN-09  
Project Manager: Brent Barron, II

<i>Analysis Requested</i>		Lab Id: Field Id: Depth: Matrix: Sampled: Extracted: Analyzed: Units/RL:	333729-025 T-8 @ 14' bgs SOIL May-26-09 13:50 Jun-01-09 08:00 Jun-01-09 11:59 mg/kg RL ND 0.0012	333729-026 T-9 @ 10' bgs SOIL May-26-09 14:00 Jun-01-09 08:00 Jun-01-09 12:43 mg/kg RL 0.0072 0.0011	333729-027 T-9 @ 14' bgs SOIL May-26-09 14:10 Jun-01-09 08:00 Jun-01-09 12:21 mg/kg RL 0.0062 0.0012	
<b>BTEX by EPA 8021B</b>						
Benzene			ND 0.0012	0.0072 0.0011	0.0062 0.0012	
Toluene			ND 0.0023	0.3247 0.0021	ND 0.0023	
Ethylbenzene			ND 0.0012	0.2975 0.0011	0.0018 0.0012	
m,p-Xylenes			ND 0.0023	0.4625 0.0021	0.0097 0.0023	
o-Xylene			ND 0.0012	0.2470 0.0011	0.0072 0.0012	
Total Xylenes			ND 0.0012	0.7095 0.0011	0.0169 0.0012	
Total BTEX			ND 0.0012	1.3389 0.0011	0.0249 0.0012	
<b>TPH By SW8015 Mod</b>						
	Extracted:	Jun-01-09 12:14	Jun-01-09 12:14	Jun-01-09 12:14	Jun-01-09 12:14	
	Analyzed:	Jun-01-09 15:06	Jun-01-09 15:29	Jun-01-09 15:52	Jun-01-09 15:52	
C6-C12 Gasoline Range Hydrocarbons		mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
C12-C28 Diesel Range Hydrocarbons		ND 17.4	383 160	ND 17.6	ND 17.6	
C28-C35 Oil Range Hydrocarbons		ND 17.4	3720 160	69.7 17.6	69.7 17.6	
Total TPH		ND 17.4	648 160	36.3 17.6	36.3 17.6	
			4751 160	106 17.6	106 17.6	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron  
Odessa Laboratory Director



# Certificate of Analysis Summary 333729

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Name: 14-Inch Vac to Jal - Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Wed May-27-09 08:34 am


Report Date: 03-JUN-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	333729-025	333729-026	333729-027		
	Field Id:	T-8 @ 14' bgs	T-9 @ 10' bgs	T-9 @ 14' bgs		
Percent Moisture	Depth:					
	Matrix:	SOIL	SOIL	SOIL		
Percent Moisture	Sampled:	May-26-09 13:50	May-26-09 14:00	May-26-09 14:10		
	Extracted:					
Percent Moisture	Analyzed:	May-28-09 08:54	May-28-09 08:54	May-28-09 08:54		
	Units/RL:	% RL 13.92 1.00	% RL 6.37 1.00	% RL 14.57 1.00		
Percent Moisture						

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
 9701 Harry Hines Blvd , Dallas, TX 75220  
 5332 Blackberry Drive, San Antonio TX 78238  
 2505 North Falkenburg Rd, Tampa, FL 33619  
 5757 NW 158th St, Miami Lakes, FL 33014  
 12600 West I-20 East, Odessa, TX 79765  
 842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760705

Sample: 530985-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/31/09 14:54

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0323	0.0300	108	80-120	
4-Bromofluorobenzene	0.0264	0.0300	88	80-120	

Lab Batch #: 760705

Sample: 530985-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/31/09 15:15

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0324	0.0300	108	80-120	
4-Bromofluorobenzene	0.0269	0.0300	90	80-120	

Lab Batch #: 760705

Sample: 530985-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 05/31/09 15:58

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0195	0.0300	65	80-120	*

Lab Batch #: 760705

Sample: 333729-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 16:41

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0189	0.0300	63	80-120	**

Lab Batch #: 760705

Sample: 333729-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 17:03

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0253	0.0300	84	80-120	
4-Bromofluorobenzene	0.0289	0.0300	96	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760705

Sample: 333729-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 17:24

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0261	0.0300	87	80-120	
4-Bromofluorobenzene	0.0251	0.0300	84	80-120	

Lab Batch #: 760705

Sample: 333729-017 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 17:46

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0270	0.0300	90	80-120	
4-Bromofluorobenzene	0.0224	0.0300	75	80-120	**

Lab Batch #: 760705

Sample: 333729-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 18:28

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0258	0.0300	86	80-120	
4-Bromofluorobenzene	0.0455	0.0300	152	80-120	**

Lab Batch #: 760705

Sample: 333729-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 19:33

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0238	0.0300	79	80-120	**
4-Bromofluorobenzene	0.0276	0.0300	92	80-120	

Lab Batch #: 760705

Sample: 333729-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 20:37

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0280	0.0300	93	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760705

Sample: 333729-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 20:59

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0233	0.0300	78	80-120	**
4-Bromofluorobenzene	0.0264	0.0300	88	80-120	

Lab Batch #: 760705

Sample: 333729-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 21:20

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0262	0.0300	87	80-120	
4-Bromofluorobenzene	0.0231	0.0300	77	80-120	**

Lab Batch #: 760705

Sample: 333729-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 22:03

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0249	0.0300	83	80-120	
4-Bromofluorobenzene	0.0274	0.0300	91	80-120	

Lab Batch #: 760705

Sample: 333729-014 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 22:46

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0243	0.0300	81	80-120	
4-Bromofluorobenzene	0.0264	0.0300	88	80-120	

Lab Batch #: 760705

Sample: 333729-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 23:07

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0256	0.0300	85	80-120	
4-Bromofluorobenzene	0.0297	0.0300	99	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760705

Sample: 333729-018 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 05/31/09 23:50

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0252	0.0300	84	80-120	
4-Bromofluorobenzene	0.0273	0.0300	91	80-120	

Lab Batch #: 760705

Sample: 333729-004 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 00:12

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0297	0.0300	99	80-120	
4-Bromofluorobenzene	0.0274	0.0300	91	80-120	

Lab Batch #: 760705

Sample: 333729-004 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 00:33

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0307	0.0300	102	80-120	
4-Bromofluorobenzene	0.0272	0.0300	91	80-120	

Lab Batch #: 760797

Sample: 531040-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 09:29

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0323	0.0300	108	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

Lab Batch #: 760797

Sample: 531040-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 09:51

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0324	0.0300	108	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760797

Sample: 531040-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 10:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0276	0.0300	92	80-120	
4-Bromofluorobenzene	0.0220	0.0300	73	80-120	*

Lab Batch #: 760797

Sample: 333729-019 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 10:55

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0208	0.0300	69	80-120	**

Lab Batch #: 760797

Sample: 333729-020 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 11:17

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0274	0.0300	91	80-120	
4-Bromofluorobenzene	0.0255	0.0300	85	80-120	

Lab Batch #: 760797

Sample: 333729-024 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 11:38

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0244	0.0300	81	80-120	
4-Bromofluorobenzene	0.0205	0.0300	68	80-120	**

Lab Batch #: 760797

Sample: 333729-025 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 11:59

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0276	0.0300	92	80-120	
4-Bromofluorobenzene	0.0204	0.0300	68	80-120	**

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760797

Sample: 333729-027 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 12:21

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0255	0.0300	85	80-120	
4-Bromofluorobenzene	0.0296	0.0300	99	80-120	

Lab Batch #: 760797

Sample: 333729-026 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 12:43

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0327	0.0300	109	80-120	
4-Bromofluorobenzene	0.1156	0.0300	385	80-120	**

Lab Batch #: 760797

Sample: 333729-021 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 13:04

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0238	0.0300	79	80-120	**
4-Bromofluorobenzene	0.0283	0.0300	94	80-120	

Lab Batch #: 760797

Sample: 333729-022 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 13:25

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0232	0.0300	77	80-120	**
4-Bromofluorobenzene	0.0288	0.0300	96	80-120	

Lab Batch #: 760797

Sample: 333729-023 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 13:47

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0227	0.0300	76	80-120	**
4-Bromofluorobenzene	0.0294	0.0300	98	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760797

Sample: 333729-025 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 19:04

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0281	0.0300	94	80-120	

Lab Batch #: 760797

Sample: 333729-025 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 19:26

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0271	0.0300	90	80-120	

Lab Batch #: 760926

Sample: 531104-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/02/09 09:31

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0322	0.0300	107	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

Lab Batch #: 760926

Sample: 531104-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/02/09 09:52

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0321	0.0300	107	80-120	
4-Bromofluorobenzene	0.0272	0.0300	91	80-120	

Lab Batch #: 760926

Sample: 531104-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/02/09 10:37

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0192	0.0300	64	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760926

Sample: 333729-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 11:41

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0245	0.0300	82	80-120	
4-Bromofluorobenzene	0.0261	0.0300	87	80-120	

Lab Batch #: 760926

Sample: 333729-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 12:24

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0251	0.0300	84	80-120	
4-Bromofluorobenzene	0.0271	0.0300	90	80-120	

Lab Batch #: 760926

Sample: 333729-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 12:46

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0251	0.0300	84	80-120	
4-Bromofluorobenzene	0.0279	0.0300	93	80-120	

Lab Batch #: 760926

Sample: 333729-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 13:08

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0257	0.0300	86	80-120	
4-Bromofluorobenzene	0.0264	0.0300	88	80-120	

Lab Batch #: 760926

Sample: 333729-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 13:50

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0261	0.0300	87	80-120	
4-Bromofluorobenzene	0.0286	0.0300	95	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760926

Sample: 334047-004 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 14:12

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0289	0.0300	96	80-120	
4-Bromofluorobenzene	0.0425	0.0300	142	80-120	*

Lab Batch #: 760926

Sample: 334047-004 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 14:33

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0448	0.0300	149	80-120	*

Lab Batch #: 760837

Sample: 531068-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 12:23

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	105	100	105	70-135	
o-Terphenyl	42.0	50.0	84	70-135	

Lab Batch #: 760837

Sample: 531068-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 12:46

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	106	100	106	70-135	
o-Terphenyl	42.8	50.0	86	70-135	

Lab Batch #: 760837

Sample: 531068-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 13:10

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	92.3	100	92	70-135	
o-Terphenyl	47.0	50.0	94	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760837

Sample: 333729-021 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 13:33

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	122	100	122	70-135	
o-Terphenyl	55.4	50.0	111	70-135	

Lab Batch #: 760837

Sample: 333729-022 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 13:56

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	128	100	128	70-135	
o-Terphenyl	53.0	50.0	106	70-135	

Lab Batch #: 760837

Sample: 333729-023 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 14:20

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	124	100	124	70-135	
o-Terphenyl	49.8	50.0	100	70-135	

Lab Batch #: 760837

Sample: 333729-024 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 14:43

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	92.8	100	93	70-135	
o-Terphenyl	49.5	50.0	99	70-135	

Lab Batch #: 760837

Sample: 333729-025 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 15:06

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	93.4	100	93	70-135	
o-Terphenyl	48.7	50.0	97	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760837

Sample: 333729-026 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 15:29

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	51.8	50.0	104	70-135	

Lab Batch #: 760837

Sample: 333729-027 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 15:52

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	95.1	100	95	70-135	
o-Terphenyl	49.6	50.0	99	70-135	

Lab Batch #: 760837

Sample: 333729-027 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:35

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	113	100	113	70-135	
o-Terphenyl	47.5	50.0	95	70-135	

Lab Batch #: 760837

Sample: 333729-027 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:58

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	117	100	117	70-135	
o-Terphenyl	49.1	50.0	98	70-135	

Lab Batch #: 760842

Sample: 531073-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 13:10

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	105	100	105	70-135	
o-Terphenyl	44.7	50.0	89	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Lab Batch #: 760842

Sample: 531073-1-BSD / BSD

Project ID: 2009-092

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 13:35

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	105	100	105	70-135	
o-Terphenyl	44.8	50.0	90	70-135	

Lab Batch #: 760842

Sample: 531073-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 14:00

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	90.4	100	90	70-135	
o-Terphenyl	48.4	50.0	97	70-135	

Lab Batch #: 760842

Sample: 333729-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 14:25

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	91.8	100	92	70-135	
o-Terphenyl	49.3	50.0	99	70-135	

Lab Batch #: 760842

Sample: 333729-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 14:50

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	85.0	100	85	70-135	
o-Terphenyl	55.2	50.0	110	70-135	

Lab Batch #: 760842

Sample: 333729-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 15:15

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	116	100	116	70-135	
o-Terphenyl	53.4	50.0	107	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760842

Sample: 333729-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 15:40

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	93.8	100	94	70-135	
o-Terphenyl	50.3	50.0	101	70-135	

Lab Batch #: 760842

Sample: 333729-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 16:05

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	124	100	124	70-135	
o-Terphenyl	47.4	50.0	95	70-135	

Lab Batch #: 760842

Sample: 333729-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 16:30

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	129	100	129	70-135	
o-Terphenyl	51.1	50.0	102	70-135	

Lab Batch #: 760842

Sample: 333729-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 16:55

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	122	100	122	70-135	
o-Terphenyl	50.2	50.0	100	70-135	

Lab Batch #: 760842

Sample: 333729-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 17:20

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	97.1	100	97	70-135	
o-Terphenyl	52.1	50.0	104	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760842

Sample: 333729-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 17:45

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	102	100	102	70-135	
o-Terphenyl	52.3	50.0	105	70-135	

Lab Batch #: 760842

Sample: 333729-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 18:10

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	96.4	100	96	70-135	
o-Terphenyl	48.9	50.0	98	70-135	

Lab Batch #: 760842

Sample: 333729-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 19:00

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	111	100	111	70-135	
o-Terphenyl	56.6	50.0	113	70-135	

Lab Batch #: 760842

Sample: 333729-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 19:24

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	122	100	122	70-135	
o-Terphenyl	51.1	50.0	102	70-135	

Lab Batch #: 760842

Sample: 333729-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 19:49

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	128	100	128	70-135	
o-Terphenyl	57.1	50.0	114	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760842

Sample: 333729-014 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 20:14

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	125	100	125	70-135	
o-Terphenyl	55.1	50.0	110	70-135	

Lab Batch #: 760842

Sample: 333729-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 20:39

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	125	100	125	70-135	
o-Terphenyl	52.6	50.0	105	70-135	

Lab Batch #: 760842

Sample: 333729-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:04

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	125	100	125	70-135	
o-Terphenyl	50.6	50.0	101	70-135	

Lab Batch #: 760842

Sample: 333729-017 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:28

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	95.5	100	96	70-135	
o-Terphenyl	51.2	50.0	102	70-135	

Lab Batch #: 760842

Sample: 333729-018 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:53

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	50.6	50.0	101	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 333729,

Project ID: 2009-092

Lab Batch #: 760842

Sample: 333729-019 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 22:18

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	96.2	100	96	70-135	
o-Terphenyl	52.1	50.0	104	70-135	

Lab Batch #: 760842

Sample: 333729-020 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 22:43

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	93.1	100	93	70-135	
o-Terphenyl	50.1	50.0	100	70-135	

Lab Batch #: 760842

Sample: 333729-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 23:08

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	108	100	108	70-135	
o-Terphenyl	48.4	50.0	97	70-135	

Lab Batch #: 760842

Sample: 333729-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 23:33

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	50.4	50.0	101	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



# BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 333729

Analyst: ASA

Lab Batch ID: 760705

Sample: 530985-1-BKS

Units: mg/kg

Date Prepared: 05/30/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 05/31/2009

Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	ND	0.1000	0.1043	104	0.1	0.1094	109	5	70-130	35	
	ND	0.1000	0.1019	102	0.1	0.1068	107	5	70-130	35	
	ND	0.1000	0.1079	108	0.1	0.1133	113	5	71-129	35	
	ND	0.2000	0.2179	109	0.2	0.2281	114	5	70-135	35	
	ND	0.1000	0.1031	103	0.1	0.1085	109	5	71-133	35	

Analyst: ASA

Lab Batch ID: 760797

Sample: 531040-1-BKS

Units: mg/kg

Date Prepared: 06/01/2009

Batch #: 1

Date Analyzed: 06/01/2009

Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Units: mg/kg  BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.1105	111	0.1	0.1094	109	1	70-130	35
	Toluene	ND	0.1000	0.1066	107	0.1	0.1053	105	1	70-130	35
	Ethylbenzene	ND	0.1000	0.1109	111	0.1	0.1096	110	1	71-129	35
	m,p-Xylenes	ND	0.2000	0.2246	112	0.2	0.2219	111	1	70-135	35
	o-Xylene	ND	0.1000	0.1060	106	0.1	0.1053	105	1	71-133	35

Relative Percent Difference RPD =  $200 * (C-F) / (C+F)$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



# BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 333729

Analyst: ASA

Lab Batch ID: 760926

Sample: 531104-1-BKS

Date Prepared: 06/01/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 06/02/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.1107	111	0.1	0.1118	112	1	70-130	35
	Toluene	ND	0.1000	0.1069	107	0.1	0.1082	108	1	70-130	35
	Ethylbenzene	ND	0.1000	0.1118	112	0.1	0.1133	113	1	71-129	35
	m,p-Xylenes	ND	0.2000	0.2249	112	0.2	0.2274	114	1	70-135	35
	o-Xylene	ND	0.1000	0.1067	107	0.1	0.1081	108	1	71-133	35

Analyst: BHW

Lab Batch ID: 760837

Sample: 531068-1-BKS

Date Prepared: 06/01/2009

Batch #: 1

Date Analyzed: 06/01/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
TPH By SW8015 Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
C6-C12 Gasoline Range Hydrocarbons	ND	1000	842	84	1000	841	84	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons	ND	1000	1040	104	1000	1040	104	0	70-135	35	

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 333729

Analyst: BHW

Lab Batch ID: 760842

Sample: 531073-1-BKS

Date Prepared: 06/01/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 06/01/2009

Matrix: Solid

Units: mg/kg

Units: mg/kg											
BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
TPH By SW8015 Mod  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	C6-C12 Gasoline Range Hydrocarbons	ND	1000	908	91	1000	904	90	70-135	35	
	C12-C28 Diesel Range Hydrocarbons	ND	1000	1080	108	1000	1070	107	70-135	35	

Relative Percent Difference RPD =  $200 * (C-F) / (C+F)$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



# Form 3 - MSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 333729

Lab Batch ID: 760705

Date Analyzed: 06/01/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 333729-004 S

Date Prepared: 05/30/2009

Batch #: 1 Matrix: Soil

Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
Reporting Units: mg/kg	BTEX by EPA 8021B											
	Analytes											
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Benzene	0.0023	0.1141	0.0980	84	0.1141	0.0977	84	0	70-130	35	
	Toluene	0.0088	0.1141	0.1059	85	0.1141	0.0984	79	7	70-130	35	
	Ethylbenzene	0.0069	0.1141	0.0971	79	0.1141	0.0978	80	1	71-129	35	
	m,p-Xylenes	0.0121	0.2282	0.1902	78	0.2282	0.1946	80	2	70-135	35	
o-Xylene	0.0052	0.1141	0.0926	77	0.1141	0.0935	77	1	71-133	35		

Lab Batch ID: 760797

Date Analyzed: 06/01/2009

Reporting Units: mg/kg

QC- Sample ID: 333729-025 S

Date Prepared: 06/01/2009

Batch #: 1 Matrix: Soil

Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
Reporting Units: mg/kg	BTEX by EPA 8021B											
	Analytes											
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Benzene	ND	0.1162	0.1004	86	0.1162	0.1043	90	4	70-130	35	
	Toluene	ND	0.1162	0.0976	84	0.1162	0.0997	86	2	70-130	35	
	Ethylbenzene	ND	0.1162	0.0802	69	0.1162	0.0777	67	3	71-129	35	X
	m,p-Xylenes	ND	0.2323	0.2091	90	0.2323	0.2156	93	3	70-135	35	
	o-Xylene	ND	0.1162	0.1001	86	0.1162	0.1025	88	2	71-133	35	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times [(C-F)/(C+F)]$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQ = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$





# Form 3 - MSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 333729

Lab Batch ID: 760926

Date Analyzed: 06/02/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 334047-004 S Batch #: 1 Matrix: Soil

Date Prepared: 06/01/2009 Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY													
Reporting Units: mg/kg	BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Benzene	0.0039	0.1162	0.0695	56	0.1162	0.0599	48	15	70-130	35	X	
	Toluene	0.0316	0.1162	0.0582	23	0.1162	0.0535	19	8	70-130	35	X	
	Ethylbenzene	0.0370	0.1162	0.0447	7	0.1162	0.0421	4	6	71-129	35	X	
	m,p-Xylenes	0.0469	0.2323	0.1022	24	0.2323	0.0944	20	8	70-135	35	X	
	o-Xylene	0.0475	0.1162	0.0447	0	0.1162	0.0418	0	7	71-133	35	X	

Lab Batch ID: 760837

Date Analyzed: 06/01/2009

Reporting Units: mg/kg

QC- Sample ID: 333729-027 S Batch #: 1 Matrix: Soil

Date Prepared: 06/01/2009 Analyst: BHW

Reporting Units: mg/kg											
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
Analytes	TPH By SW8015 Mod										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	ND	1170	1030	88	1170	1060	91	3	70-135	35	
C12-C28 Diesel Range Hydrocarbons	69.7	1170	1320	107	1170	1380	112	4	70-135	35	

Lab Batch ID: 760842

Date Analyzed: 06/01/2009

Reporting Units: mg/kg

QC- Sample ID: 333729-001 S Batch #: 1 Matrix: Soil

Date Prepared: 06/01/2009 Analyst: BHW

Reporting Units: mg/kg											
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	ND	1100	987	90	1100	1090	99	10	70-135	35	
C12-C28 Diesel Range Hydrocarbons	16.4	1100	1170	105	1100	1300	117	11	70-135	35	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times (C-F)/(C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$



## Sample Duplicate Recovery



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 333729

Lab Batch #: 760246

Project ID: 2009-092

Date Analyzed: 05/28/2009

Date Prepared: 05/28/2009

Analyst: BEV

QC- Sample ID: 333729-001 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	8.71	10.5	18	20	

Lab Batch #: 760247

Date Analyzed: 05/28/2009

Date Prepared: 05/28/2009

Analyst: BEV

QC- Sample ID: 333729-021 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	12.8	12.9	1	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
All Results are based on MDL and validated for QC purposes.  
BRL - Below Reporting Limit







**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Basin/Plains  
Date/ Time: 05/27/09 8:34  
Lab ID #: 333729  
Initials: gwa

**Sample Receipt Checklist**

				Client Initials
#1	Temperature of container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	-1.5 °C
#2	Shipping container in good condition?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Present
#4	Custody Seals intact on sample bottles/ container?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Present
#5	Chain of Custody present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	ID written on Cont./ Lid
#9	Container label(s) legible and intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#11	Containers supplied by ELOT?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#12	Samples in proper container/ bottle?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below
#13	Samples properly preserved?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below
#14	Sample bottles intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#15	Preservations documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#16	Containers documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below
#18	All samples received within sufficient hold time?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below
#19	Subcontract of sample(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable
#20	VOC samples have zero headspace?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# **Analytical Report 334002**

**for**

## **PLAINS ALL AMERICAN EH&S**

**Project Manager: Jason Henry**

**14" Vac to Jal - Legacy**

**2009-092**

**03-JUN-09**



**12600 West I-20 East Odessa, Texas 79765**

**Texas certification numbers:**

**Houston, TX T104704215-08B-TX - Odessa/Midland, TX T104704400-08-TX  
Corpus Christi, TX T104704370-08-TX - Dallas, TX T104704295-08-TX**

**Florida certification numbers:**

**Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675  
Miramar, FL E86349  
Norcross(Atlanta), GA E87429**

**South Carolina certification numbers:**

**Norcross(Atlanta), GA 98015**

**North Carolina certification numbers:**

**Norcross(Atlanta), GA 483**

**Houston - Dallas - San Antonio - Tampa - Miami - Latin America  
Midland - Corpus Christi - Atlanta**



03-JUN-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **334002**  
**14" Vac to Jal - Legacy**  
Project Address: Jal, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 334002. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 334002 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America





## Sample Cross Reference 334002



PLAINS ALL AMERICAN EH&S, Midland, TX

14" Vac to Jal - Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Main Exc. ESW-1 @ 8'bgs	S	May-28-09 15:30		334002-001
Main Exc. ESW-2 @ 5'bgs	S	May-28-09 15:40		334002-002
Main Exc. ESW-3 @ 3'bgs	S	May-28-09 15:50		334002-003
Main Exc. SSW @ 9.5'bgs	S	May-28-09 16:00		334002-004



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14" Vac to Jal - Legacy*

*Project ID: 2009-092*

*Work Order Number: 334002*

*Report Date: 03-JUN-09*

*Date Received: 05/28/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-760577 Percent Moisture

AD2216A

Batch 760577, Percent Moisture RPD is outside the QC limit. This is most likely due to sample non-homogeneity.

Samples affected are: 334002-001, -003, -002, -004.

Batch: LBA-760797 BTEX-MTBE EPA 8021B

SW8021BM

Batch 760797, 4-Bromofluorobenzene recovered below QC limits. Data not confirmed by re-analysis. Samples affected are: 531040-1-BLK, 334002-002, 334002-001. Matrix Interferences are suspected in sample surrogate failures.

SW8021BM

Batch 760797, Ethylbenzene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.

Samples affected are: 334002-001, -003, -002, -004.

The Laboratory Control Sample for Ethylbenzene is within laboratory Control Limits

Batch: LBA-760837 TPH by SW8015 Mod

None

Batch: LBA-761030 TPH by SW8015 Mod

None



# Certificate of Analysis Summary 334002

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Jal, NM

Project Name: 14" Vac to Jal - Legacy

Date Received in Lab: Thu May-28-09 05:45 pm


Report Date: 03-JUN-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:		334002-001		334002-002		334002-003		334002-004	
	Field Id:	Depth:	Main Exc. ESW-1 @ 8'bs	SOIL	Main Exc. ESW-2 @ 5'bs	SOIL	Main Exc. ESW-3 @ 3'bs	SOIL	Main Exc. SSW @ 9.5'bs	
BTEX by EPA 8021B	Matrix:		May-28-09 15:30		May-28-09 15:40		May-28-09 15:50		May-28-09 16:00	
	Sampled:									
	Extracted:		Jun-01-09 08:00		Jun-01-09 08:00		Jun-01-09 08:00		Jun-01-09 08:00	
	Analyzed:		Jun-01-09 16:32		Jun-01-09 16:54		Jun-01-09 17:16		Jun-01-09 17:38	
	Units/RL:		mg/kg RL	ND 0.0011	mg/kg RL	ND 0.0011	mg/kg RL	ND 0.0010	mg/kg RL	ND 0.0011
Percent Moisture	Benzen									
	Toluene									
	Ethylbenzene									
	m,p-Xylenes									
	o-Xylene									
	Total Xylenes									
TPH By SW8015 Mod	Total BTEX									
	Extracted:									
	Analyzed:									
	Units/RL:									
Percent Moisture	Percent Moisture									
	Extracted:									
	Analyzed:									
	Units/RL:									
C6-C12 Gasoline Range Hydrocarbons	Extracted:									
	Analyzed:									
	Units/RL:									
C12-C28 Diesel Range Hydrocarbons	Extracted:									
	Analyzed:									
	Units/RL:									
C28-C33 Oil Range Hydrocarbons	Extracted:									
	Analyzed:									
	Units/RL:									
Total TPH	Extracted:									
	Analyzed:									
	Units/RL:									

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd , Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy



Work Orders : 334002,

Project ID: 2009-092

Lab Batch #: 760797

Sample: 531040-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 09:29

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0323	0.0300	108	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

Lab Batch #: 760797

Sample: 531040-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 09:51

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0324	0.0300	108	80-120	
4-Bromofluorobenzene	0.0267	0.0300	89	80-120	

Lab Batch #: 760797

Sample: 531040-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 10:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0276	0.0300	92	80-120	
4-Bromofluorobenzene	0.0220	0.0300	73	80-120	*

Lab Batch #: 760797

Sample: 334002-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 16:32

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0223	0.0300	74	80-120	*

Lab Batch #: 760797

Sample: 334002-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 16:54

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0276	0.0300	92	80-120	
4-Bromofluorobenzene	0.0232	0.0300	77	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 334002,

Project ID: 2009-092

Lab Batch #: 760797

Sample: 334002-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 17:16

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0273	0.0300	91	80-120	
4-Bromofluorobenzene	0.0251	0.0300	84	80-120	

Lab Batch #: 760797

Sample: 334002-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 17:38

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0277	0.0300	92	80-120	
4-Bromofluorobenzene	0.0245	0.0300	82	80-120	

Lab Batch #: 760797

Sample: 333729-025 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 19:04

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0281	0.0300	94	80-120	

Lab Batch #: 760797

Sample: 333729-025 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 19:26

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0271	0.0300	90	80-120	

Lab Batch #: 760837

Sample: 531068-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 12:23

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	105	100	105	70-135	
o-Terphenyl	42.0	50.0	84	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 334002,

Project ID: 2009-092

Lab Batch #: 760837

Sample: 531068-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 12:46

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	106	100	106	70-135	
o-Terphenyl	42.8	50.0	86	70-135	

Lab Batch #: 760837

Sample: 531068-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/01/09 13:10

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	92.3	100	92	70-135	
o-Terphenyl	47.0	50.0	94	70-135	

Lab Batch #: 760837

Sample: 334002-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:12

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	96.6	100	97	70-135	
o-Terphenyl	52.2	50.0	104	70-135	

Lab Batch #: 760837

Sample: 333729-027 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:35

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	113	100	113	70-135	
o-Terphenyl	47.5	50.0	95	70-135	

Lab Batch #: 760837

Sample: 333729-027 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/01/09 21:58

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	117	100	117	70-135	
o-Terphenyl	49.1	50.0	98	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 334002,

Project ID: 2009-092

Lab Batch #: 761030

Sample: 531173-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/02/09 15:49

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	112	100	112	70-135	
o-Terphenyl	47.3	50.0	95	70-135	

Lab Batch #: 761030

Sample: 531173-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/02/09 16:12

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	112	100	112	70-135	
o-Terphenyl	46.0	50.0	92	70-135	

Lab Batch #: 761030

Sample: 531173-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 06/02/09 16:35

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	94.3	100	94	70-135	
o-Terphenyl	50.6	50.0	101	70-135	

Lab Batch #: 761030

Sample: 334002-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 16:58

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	98.1	100	98	70-135	
o-Terphenyl	52.0	50.0	104	70-135	

Lab Batch #: 761030

Sample: 334002-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 17:21

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	105	100	105	70-135	
o-Terphenyl	54.0	50.0	108	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 334002,

Lab Batch #: 761030

Sample: 334002-004 / SMP

Project ID: 2009-092

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 17:44

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	104	100	104	70-135	
o-Terphenyl	53.8	50.0	108	70-135	

Lab Batch #: 761030

Sample: 334002-004 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 21:56

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	121	100	121	70-135	
o-Terphenyl	55.0	50.0	110	70-135	

Lab Batch #: 761030

Sample: 334002-004 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 06/02/09 22:18

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	124	100	124	70-135	
o-Terphenyl	52.3	50.0	105	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.

## Project Name: 14" Vac to Jal - Legacy

Work Order #: 334002

Analyst: ASA

Lab Batch ID: 760797

Sample: 531040-1-BKS

Date Prepared: 06/01/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 06/01/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
BTEX by EPA 8021B		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
Benzene		ND	0.1000	0.1105	111	0.1	0.1094	109	1	70-130	35	
Toluene		ND	0.1000	0.1066	107	0.1	0.1053	105	1	70-130	35	
Ethylbenzene		ND	0.1000	0.1109	111	0.1	0.1096	110	1	71-129	35	
m,p-Xylenes		ND	0.2000	0.2246	112	0.2	0.2219	111	1	70-135	35	
o-Xylene		ND	0.1000	0.1060	106	0.1	0.1053	105	1	71-133	35	

Analyst: BHW

Date Prepared: 06/01/2009

Date Analyzed: 06/01/2009

Lab Batch ID: 760837

Sample: 531068-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TPH By SW8015 Mod		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
C6-C12 Gasoline Range Hydrocarbons		ND	1000	842	84	1000	841	84	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons		ND	1000	1040	104	1000	1040	104	0	70-135	35	

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



Work Order #: 334002

Analyst: BHW

Lab Batch ID: 761030

Sample: 531173-1-BKS

Units: mg/kg

Date Prepared: 06/01/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 06/02/2009

Matrix: Solid

Project Name: 14" Vac to Jal - Legacy

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
Analytes	TPH By SW8015 Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	C6-C12 Gasoline Range Hydrocarbons	ND	1000	877	88	1000	873	87	0	70-135	35	
	C12-C28 Diesel Range Hydrocarbons	ND	1000	1120	112	1000	1100	110	2	70-135	35	

Relative Percent Difference RPD =  $200 * (C - F) / (C + F)$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



# Form 3 - MSD Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Order #: 334002

Lab Batch ID: 760797

Date Analyzed: 06/01/2009

Project ID: 2009-092

QC- Sample ID: 333729-025 S

Date Prepared: 06/01/2009

Batch #: 1

Matrix: Soil

Analyst: ASA

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
Reporting Units: mg/kg	BTEX by EPA 8021B											
	Analytes											
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Benzene	ND	0.1162	0.1004	86	0.1162	0.1043	90	4	70-130	35	
	Toluene	ND	0.1162	0.0976	84	0.1162	0.0997	86	2	70-130	35	
	Ethylbenzene	ND	0.1162	0.0802	69	0.1162	0.0777	67	3	71-129	35	X
	m,p-Xylenes	ND	0.2323	0.2091	90	0.2323	0.2156	93	3	70-135	35	
	o-Xylene	ND	0.1162	0.1001	86	0.1162	0.1025	88	2	71-133	35	

Lab Batch ID: 760837

Date Analyzed: 06/01/2009

Reporting Units: mg/kg

QC- Sample ID: 333729-027 S

Date Prepared: 06/01/2009

Batch #: 1

Matrix: Soil

Analyst: BHW

Reporting Units: mg/kg												
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
TPH By SW8015 Mod  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	C6-C12 Gasoline Range Hydrocarbons	ND	1170	1030	88	1170	1060	91	3	70-135	35	
	C12-C28 Diesel Range Hydrocarbons	69.7	1170	1320	107	1170	1380	112	4	70-135	35	

Lab Batch ID: 761030

Date Analyzed: 06/02/2009

Reporting Units: mg/kg

QC- Sample ID: 334002-004 S

Date Prepared: 06/01/2009

Batch #: 1

Matrix: Soil

Analyst: BHW

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
Reporting Units: mg/kg	TPH By SW8015 Mod  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	C6-C12 Gasoline Range Hydrocarbons	ND	1110	1000	90	1110	1040	94	4	70-135	35	
	C12-C28 Diesel Range Hydrocarbons	ND	1110	1240	112	1110	1290	116	4	70-135	35	

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B  
Relative Percent Difference RPD = 200\*(C-F)/(C+F)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E



## Sample Duplicate Recovery



Project Name: 14" Vac to Jal - Legacy

Work Order #: 334002

Lab Batch #: 760577

Project ID: 2009-092

Date Analyzed: 05/29/2009

Date Prepared: 05/29/2009

Analyst: JLG

QC- Sample ID: 333999-001 S D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	2.91	5.39	60	20	F

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

# Xenco Laboratories

The Environmental Lab of Texas

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12800 West I-20 East  
Odessa, Texas 79765

Phone: 432-563-1800  
Fax: 432-563-1713

Project Manager:

CAMILLE BRYANT

Company Name

BASIN ENVIRONMENTAL

Company Address:

2800 Plains Hwy

City/State/Zip:

Lovington, NM 88640

Telephone No:

505-625-7210

Fax No:

505-396-1429

Sampler Signature:

*[Signature]*

e-mail:

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

PO #:

505-396-1429

Project Loc:

14<sup>th</sup> VAC-TAC-LEGACY

Project #:

2009-072

Project Loc:

241, NM

PO #:

505-396-1429

Report Format:

☒ Standard ☐ TRRP ☐ NPDES

Lab # (lab use only)	ORDER #	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Total # of Containers	Matrix	Analysis For:
01	MAU-Exc. ESU-10-08-04	5/2/04	1530						
02	MAU-Exc. ESU-20-5/04	5/2/04	1540						
03	MAU-Exc. ESU-30-3/04	5/2/04	1550						
04	MAU-Exc. ESU-40-9/5/04	5/2/04	1600						

Special Instructions:	Received by:	Date:	Time:
	<i>[Signature]</i>	5/2/04	1745

**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Plains Basin  
Date/ Time: 05-28-09 @ 1745  
Lab ID #: 3374002  
Initials: JMF

**Sample Receipt Checklist**

			Client Initials	
#1	Temperature of container/ cooler?	<input checked="" type="radio"/> Yes <input type="radio"/> No	4.5	° C
#2	Shipping container in good condition?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Not Present	
#4	Custody Seals intact on sample bottles/ container? / (ahr)	<input checked="" type="radio"/> Yes <input type="radio"/> No	Not Present	
#5	Chain of Custody present?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="radio"/> Yes <input type="radio"/> No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#11	Containers supplied by ELOT?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#12	Samples in proper container/ bottle?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#13	Samples properly preserved?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#14	Sample bottles intact?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#15	Preservations documented on Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#16	Containers documented on Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#18	All samples received within sufficient hold time?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#19	Subcontract of sample(s)?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Not Applicable	
#20	VOC samples have zero headspace?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Not Applicable	

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# Analytical Report 337175

for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14-Inch Vac to Jal- Legacy**

**2009-092**

**03-AUG-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Miramar (EPA Lab code: FL01246): Florida (E86349)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Houston - Dallas - San Antonio - Tampa - Miami - Midland - Corpus Christi - Atlanta - Latin America





03-AUG-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **337175**  
**14-Inch Vac to Jal- Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 337175. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 337175 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



## Sample Cross Reference 337175



PLAINS ALL AMERICAN EH&S, Midland, TX

14-Inch Vac to Jal- Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-1 @ 5'	S	Jul-01-09 09:30		337175-001
MW-1 @ 15'	S	Jul-01-09 09:50		337175-002
MW-1 @ 25'	S	Jul-01-09 10:00		337175-003
MW-1 @ 35'	S	Jul-01-09 10:20		337175-004
MW-1 @ 45'	S	Jul-01-09 10:45		337175-005
MW-1 @ 50'	S	Jul-01-09 11:15		337175-006
MW-1 @ 55'	S	Jul-01-09 12:05		337175-007
SB-2 @ 5'	S	Jul-01-09 13:10		337175-008
SB-2 @ 15'	S	Jul-01-09 13:40		337175-009
SB-2 @ 25'	S	Jul-01-09 14:10		337175-010
SB-2 @ 35'	S	Jul-01-09 14:35		337175-011
SB-2 @ 45'	S	Jul-01-09 15:10		337175-012
SB-2 @ 50'	S	Jul-01-09 15:40		337175-013
SB-2 @ 55'	S	Jul-01-09 16:10		337175-014
SB-3 @ 5'	S	Jul-02-09 09:50		337175-015
SB-3 @ 15'	S	Jul-02-09 10:15		337175-016
SB-3 @ 25'	S	Jul-02-09 10:35		337175-017
SB-3 @ 35'	S	Jul-02-09 11:05		337175-018
SB-3 @ 45'	S	Jul-02-09 11:30		337175-019
SB-3 @ 50'	S	Jul-02-09 11:55		337175-020
SB-3 @ 55'	S	Jul-02-09 12:25		337175-021



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal- Legacy*

*Project ID: 2009-092*

*Work Order Number: 337175*

*Report Date: 03-AUG-09*

*Date Received: 07/06/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-764625 Percent Moisture

None

Batch: LBA-764626 Percent Moisture

None

Batch: LBA-764775 TX1005

None

Batch: LBA-764777 TPH by SW8015 Mod

None

Batch: LBA-765019 BTEX-MTBE EPA 8021B

SW8021BM

Batch 765019, 4-Bromofluorobenzene recovered below QC limits Sample Data not confirmed by re-analysis. Samples affected are: 533394-1-BLK, 337175-002, 337175-001.

4-Bromofluorobenzene recovered above QC limits Data not confirmed by re-analysis. Samples affected are: 337175-003, 337175-002, 337175-001, 337025-001 S, 337025-001 SD, and 533394-1-BKS

SW8021BM

Batch 765019, Toluene recovered below QC limits in the Matrix Spike.

Samples affected are: 337175-001, -002, -003.

The Laboratory Control Sample for Toluene is within laboratory Control Limits



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal- Legacy*

*Project ID: 2009-092*

*Work Order Number: 337175*

*Report Date: 03-AUG-09*

*Date Received: 07/06/2009*

---

*Batch: LBA-765081 BTEX-MTBE EPA 8021B*

*SW8021BM*

*Batch 765081: 4-Bromofluorobenzene recovered above QC limits. QC Data not confirmed by re-analysis. Samples affected are: 337175-021, 337175-007.*

*1,4-Difluorobenzene recovered below QC limits. QC Data not confirmed by re-analysis. Samples affected are: 337175-019, 337175-020, 337175-021, 337175-011.*

*Matrix interferences is suspected.*

*Batch: LBA-765200 BTEX-MTBE EPA 8021B*

*SW8021BM*

*Batch 765200, Benzene, Toluene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.*

*Samples affected are: 337175-013, -005, -006, -010, -014.*

*The Laboratory Control Sample for Toluene, Benzene is within laboratory Control Limits*

*SW8021BM*

*Batch 765200, 4-Bromofluorobenzene recovered below QC limits Data not confirmed by re-analysis. Samples affected are: 533475-1-BLK.*

*4-Bromofluorobenzene recovered above QC limits Data not confirmed by re-analysis. Samples affected are: 337713-006 S and 337713-006 SD, 337175-006, 337175-005, 337175-010*



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal- Legacy*

*Project ID: 2009-092*

*Work Order Number: 337175*

*Report Date: 03-AUG-09*

*Date Received: 07/06/2009*

*Batch: LBA-765231 BTEX-MTBE EPA 8021B  
SW8021BM*

*Batch 765231, 1,4-Difluorobenzene recovered below QC limits . Matrix interferences is suspected; data confirmed by re-analysis*

*Samples affected are: 337175-015.*

*4-Bromofluorobenzene recovered below QC limits Data not confirmed by re-analysis. Samples affected are: 533520-1-BLK.*

*1,4-Difluorobenzene recovered above QC limits . Matrix interferences is suspected; data confirmed by re-analysis*

*Samples affected are: 337175-009.*

*4-Bromofluorobenzene recovered above QC limits . Matrix interferences is suspected; Sample data confirmed by re-analysis*

*Samples affected are: 337719-001 S,337175-004,337175-015. QC data not confirmed by reanalysis.*

*SW8021BM*

*Batch 765231, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Benzene recovered below QC limits in the Matrix Spike Duplicate.*

*Samples affected are: 337175-004, -009, -015.*

*The Laboratory Control Sample for Toluene, m,p-Xylenes , Benzene, Ethylbenzene, o-Xylene is within laboratory Control Limits*

*SW8021BM*

*Batch 765231, Ethylbenzene, m,p-Xylenes , o-Xylene RPD was outside QC limits; is reportable as LCS is passing.*

*Samples affected are: 337175-004, -009, -015*



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal- Legacy*

*Project ID: 2009-092*  
*Work Order Number: 337175*

*Report Date: 03-AUG-09*  
*Date Received: 07/06/2009*

---

*Batch: LBA-765323 BTEX-MTBE EPA 8021B*  
*SW8021BM*

*Batch 765323, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike Duplicate.*

*Samples affected are: 337175-012, -016, -017, -008.*

*The Laboratory Control Sample for Toluene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits*

*SW8021BM*

*Batch 765323, 4-Bromofluorobenzene recovered below QC limits Data not confirmed by re-analysis. Samples affected are: 533559-1-BLK.*

*4-Bromofluorobenzene recovered above QC limits Data not confirmed by re-analysis. Samples affected are: 533559-1-BKS, 533559-1-BSD, 337175-012S, 337175-012SD*

*4-Bromofluorobenzene recovered above QC limits Data confirmed by re-analysis. Samples affected are: 337175-016 and -008*

*Batch: LBA-767305 Inorganic Anions by EPA 300*  
*None*

*Batch: LBA-767307 Inorganic Anions by EPA 300*  
*None*



# Certificate of Analysis Summary 337175

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Project Name: 14-Inch Vac to Jal- Legacy

Date Received in Lab: Mon Jul-06-09 12:35 pm

Report Date: 03-AUG-09

Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	337175-001	337175-002	337175-003	337175-004	337175-005	337175-006
Field Id:		MW-1 @ 5'	MW-1 @ 15'	MW-1 @ 25'	MW-1 @ 35'	MW-1 @ 45'	MW-1 @ 50'	
Depth:								
Matrix:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampled:		Jul-01-09 09:30	Jul-01-09 09:50	Jul-01-09 10:00	Jul-01-09 10:20	Jul-01-09 10:45	Jul-01-09 11:15	
Anions by EPA 300	Extracted:							
	Analyzed:	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		53.4	6.11	10.3	5.41	22.1	5.14	19.6
BTEX by EPA 8021B	Extracted:							
	Analyzed:	Jul-09-09 17:00	Jul-09-09 17:00	Jul-09-09 17:00	Jul-11-09 11:15	Jul-11-09 10:00	Jul-11-09 10:00	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		1.447	0.0611	0.5279	0.1082	0.5556	0.2697	ND
Toluene		13.56	0.1222	18.58	0.2163	10.74	0.5394	0.0127
Ethylbenzene		10.15	0.0611	18.72	0.1082	17.45	0.2697	0.0642
m,p-Xylenes		14.23	0.1222	29.75	0.2163	30.49	0.5394	0.1268
o-Xylene		6.562	0.0611	11.92	0.1082	11.55	0.2697	0.0578
Total Xylenes		20.792	0.0611	41.67	0.1082	42.04	0.2697	0.1846
Total BTEX		45.949	0.0611	79.4979	0.1082	70.7856	0.2697	0.2615
TPH By SW8015 Mod	Extracted:							
	Analyzed:	Jul-07-09 12:24	Jul-07-09 12:24	Jul-07-09 12:24	Jul-07-09 12:24	Jul-07-09 12:24	Jul-07-09 12:24	Jul-07-09 12:24
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C12 Gasoline Range Hydrocarbons		731	183	1950	81.1	66.8	16.2	336
C12-C28 Diesel Range Hydrocarbons		2310	183	7270	81.1	827	16.2	2910
C28-C35 Oil Range Hydrocarbons		ND	183	435	81.1	51.6	16.2	195
Total TPH		3041	183	9655	81.1	945.4	16.2	3441

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron, II

Odessa Laboratory Manager



# Certificate of Analysis Summary 337175

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Project Name: 14-Inch Vac to Jal- Legacy

Date Received in Lab: Mon Jul-06-09 12:35 pm


Report Date: 03-AUG-09

Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	337175-001	337175-002	337175-003	337175-004	337175-005	337175-006
		Field Id:	MW-1 @ 5'	MW-1 @ 15'	MW-1 @ 25'	MW-1 @ 35'	MW-1 @ 45'	MW-1 @ 50'
		Depth:						
		Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Sampled:	Jul-01-09 09:30	Jul-01-09 09:50	Jul-01-09 10:00	Jul-01-09 10:20	Jul-01-09 10:45	Jul-01-09 11:15
Percent Moisture		Extracted:						
		Analyzed:	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45
		Units/RL:	% RL	% RL	% RL	% RL	% RL	% RL
Percent Moisture			18.20	26.12	7.55	7.30	2.63	4.21
			1.00	1.00	1.00	1.00	1.00	1.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron, II  
Odessa Laboratory Manager





**Certificate of Analysis Summary 337175**  
**PLAINS ALL AMERICAN EHS, Midland, TX**  
**Project Name: 14-Inch Vac to Jal- Legacy**



Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea County, NM

Date Received in Lab: Mon Jul-06-09 12:35 pm  
Report Date: 03-AUG-09  
Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	337175-007	337175-008	337175-009	337175-010	337175-011	337175-012
	Field Id:	MW-1 @ 5'	SB-2 @ 5'	SB-2 @ 15'	SB-2 @ 25'	SB-2 @ 35'	SB-2 @ 45'
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Anions by EPA 300	Sampled:	Jul-01-09 12:05	Jul-01-09 13:10	Jul-01-09 13:40	Jul-01-09 14:10	Jul-01-09 14:35	Jul-01-09 15:10
	Extracted:						
	Analyzed:	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55
	Units/RL:	mg/kg RL 179 10.5	mg/kg RL 47.7 5.58	mg/kg RL 34.0 5.65	mg/kg RL 32.3 5.66	mg/kg RL ND 5.15	mg/kg RL 51.2 5.29
BTEX by EPA 8021B	Sampled:						
	Extracted:	Jul-09-09 17:00	Jul-11-09 12:05	Jul-11-09 11:15	Jul-11-09 10:00	Jul-09-09 17:00	Jul-11-09 12:05
	Analyzed:	Jul-10-09 13:18	Jul-14-09 00:55	Jul-13-09 08:35	Jul-12-09 16:14	Jul-10-09 13:39	Jul-13-09 22:46
	Units/RL:	mg/kg RL ND 0.0011	mg/kg RL ND 0.0279	mg/kg RL 0.2671 0.0565	mg/kg RL ND 0.0011	mg/kg RL ND 0.0010	mg/kg RL ND 0.0011
Percent Moisture	Sampled:						
	Extracted:						
	Analyzed:	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45
	Units/RL:	% RL 4.84 1.00	% RL 10.46 1.00	% RL 11.47 1.00	% RL 11.60 1.00	% RL 2.83 1.00	% RL 5.47 1.00
TPH By SW8015 Mod	Sampled:						
	Extracted:	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22
	Analyzed:	Jul-08-09 01:35	Jul-08-09 02:01	Jul-08-09 02:26	Jul-08-09 02:52	Jul-08-09 03:16	Jul-08-09 03:41
	Units/RL:	mg/kg RL 25.8 15.8	mg/kg RL 904 83.8	mg/kg RL 555 16.9	mg/kg RL 21.1 16.9	mg/kg RL ND 15.4	mg/kg RL 27.2 15.9
Total TPH	Sampled:						
	Extracted:						
	Analyzed:	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45
	Units/RL:	% RL 4.84 1.00	% RL 10.46 1.00	% RL 11.47 1.00	% RL 11.60 1.00	% RL 2.83 1.00	% RL 5.47 1.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron, II  
Odessa Laboratory Manager



# Certificate of Analysis Summary 337175

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Project Name: 14-Inch Vac to Jal- Legacy

Date Received in Lab: Mon Jul-06-09 12:35 pm

Report Date: 03-AUG-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	337175-013	337175-014	337175-015	337175-016	337175-017	337175-018
	Field Id:	SB-2 @ 50'	SB-2 @ 55'	SB-3 @ 5'	SB-3 @ 15'	SB-3 @ 25'	SB-3 @ 35'
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Jul-01-09 15:40	Jul-01-09 16:10	Jul-02-09 09:50	Jul-02-09 10:15	Jul-02-09 10:35	Jul-02-09 11:05
Anions by EPA 300	Extracted:						
	Analyzed:	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 07:55	Jul-31-09 13:25	Jul-31-09 13:25
	Units/RL:	mg/kg RL 471 10.7	mg/kg RL 952 22.4	mg/kg RL 152 10.6	mg/kg RL 73.0 5.43	mg/kg RL 54.4 5.53	mg/kg RL 24.8 5.19
BTEX by EPA 8021B	Extracted:	Jul-11-09 10:00	Jul-11-09 10:00	Jul-11-09 11:15	Jul-11-09 12:05	Jul-11-09 12:05	Jul-09-09 17:00
	Analyzed:	Jul-12-09 12:50	Jul-12-09 15:55	Jul-13-09 09:31	Jul-14-09 01:13	Jul-14-09 02:26	Jul-10-09 11:30
	Units/RL:	mg/kg RL NID 0.0011	mg/kg RL NID 0.0011	mg/kg RL 0.0644 0.0528	mg/kg RL NID 0.0272	mg/kg RL NID 0.5530	mg/kg RL NID 0.0010
	Benzene	NID 0.0011	NID 0.0022	1.411 0.1055	0.6387 0.0543	2.969 1.106	NID 0.0021
	Toluene	NID 0.0011	NID 0.0011	1.604 0.0528	2.621 0.0272	4.529 0.5530	NID 0.0010
	Ethylbenzene	NID 0.0021	NID 0.0022	2.708 0.1055	4.548 0.0543	7.355 1.106	NID 0.0021
	m,p-Xylenes	NID 0.0011	NID 0.0011	0.9809 0.0528	1.919 0.0272	2.875 0.5530	NID 0.0010
Percent Moisture	o-Xylene	NID 0.0011	NID 0.0011	3.6889 0.0528	6.467 0.0272	10.23 0.5530	NID 0.0010
	Total Xylenes	NID 0.0011	NID 0.0011	6.7683 0.0528	9.7267 0.0272	17.728 0.5530	NID 0.0010
	Total BTEX	NID 0.0011	NID 0.0011				
TPH By SW8015 Mod	Extracted:	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45
	Analyzed:	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22
	Units/RL:	mg/kg RL 6.52 1.00	mg/kg RL 10.91 1.00	mg/kg RL 5.24 1.00	mg/kg RL 7.94 1.00	mg/kg RL 9.58 1.00	mg/kg RL 3.61 1.00
C6-C12 Gasoline Range Hydrocarbons	Extracted:	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22
	Analyzed:	Jul-08-09 04:06	Jul-08-09 04:30	Jul-08-09 04:55	Jul-08-09 05:20	Jul-08-09 06:10	Jul-08-09 06:35
	Units/RL:	mg/kg RL 19.6 16.0	mg/kg RL 16.8 16.8	mg/kg RL 1550 79.0	mg/kg RL 477 81.3	mg/kg RL 887 82.9	mg/kg RL ND 15.6
	C12-C28 Diesel Range Hydrocarbons	105 16.0	86.8 16.8	4450 79.0	2660 81.3	4560 82.9	103 15.6
	C28-C35 Oil Range Hydrocarbons	ND 16.0	ND 16.8	226 79.0	155 81.3	268 82.9	ND 15.6
Total TPH		124.6 16.0	103.6 16.8	6226 79.0	3292 81.3	5715 82.9	103 15.6

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron, II  
Odessa Laboratory Manager



# Certificate of Analysis Summary 337175

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea County, NM

Project Name: 14-Inch Vac to Jal- Legacy

Date Received in Lab: Mon Jul-06-09 12:35 pm

Report Date: 03-AUG-09

Project Manager: Brent Barron, II

<i>Analysis Requested</i>		<i>Lab Id:</i> <i>Field Id:</i> <i>Depth:</i> <i>Matrix:</i> <i>Sampled:</i>	<i>337175-019</i> SB-3 @ 45'	<i>337175-020</i> SB-3 @ 50'	<i>337175-021</i> SB-3 @ 55'
<b>Anions by EPA 300</b>			SOIL Jul-02-09 11:30	SOIL Jul-02-09 11:55	SOIL Jul-02-09 12:25
	<i>Extracted:</i>				
	<i>Analyzed:</i>	Jul-31-09 13:25	Jul-31-09 13:25	Jul-31-09 13:25	Jul-31-09 13:25
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		17.2	5.13	8.94	5.14
<b>BTEX by EPA 8021B</b>					
	<i>Extracted:</i>	Jul-09-09 17:00	Jul-09-09 17:00	Jul-09-09 17:00	Jul-09-09 17:00
	<i>Analyzed:</i>	Jul-10-09 11:52	Jul-10-09 12:13	Jul-10-09 12:35	Jul-10-09 12:35
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		ND	0.0010	ND	0.0010
Toluene		ND	0.0021	ND	0.0035
Ethylbenzene		0.0023	0.0010	0.0015	0.0010
m,p-Xylenes		0.0054	0.0021	0.0035	0.0020
o-Xylene		0.0028	0.0010	0.0018	0.0010
Total Xylenes		0.0082	0.0010	0.0053	0.0010
Total BTEX		0.0105	0.0010	0.0068	0.0010
<b>Percent Moisture</b>					
	<i>Extracted:</i>	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45	Jul-06-09 12:45
	<i>Analyzed:</i>				
	<i>Units/RL:</i>	% RL	% RL	% RL	% RL
Percent Moisture		2.58	1.00	2.27	1.00
<b>TPH By SW8015 Mod</b>					
	<i>Extracted:</i>	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22	Jul-07-09 13:22
	<i>Analyzed:</i>	Jul-08-09 06:59	Jul-08-09 07:24	Jul-08-09 07:48	Jul-08-09 07:48
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C12 Gasoline Range Hydrocarbons		17.3	15.3	ND	23.3
C12-C28 Diesel Range Hydrocarbons		113	15.3	72.2	159
C28-C35 Oil Range Hydrocarbons		18.0	15.3	ND	18.2
Total TPH		148.3	15.3	72.2	200.5

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd, Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765019

Sample: 533394-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/09/09 22:13

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0300	0.0300	100	80-120	
4-Bromofluorobenzene	0.0370	0.0300	123	80-120	**

Lab Batch #: 765019

Sample: 533394-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/09/09 22:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0304	0.0300	101	80-120	
4-Bromofluorobenzene	0.0348	0.0300	116	80-120	

Lab Batch #: 765019

Sample: 533394-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/09/09 23:17

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0265	0.0300	88	80-120	
4-Bromofluorobenzene	0.0127	0.0300	42	80-120	**

Lab Batch #: 765019

Sample: 337175-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 01:26

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0256	0.0300	85	80-120	
4-Bromofluorobenzene	0.0517	0.0300	172	80-120	*

Lab Batch #: 765019

Sample: 337175-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 02:09

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0242	0.0300	81	80-120	
4-Bromofluorobenzene	0.0556	0.0300	185	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765019

Sample: 337175-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 07:30

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0270	0.0300	90	80-120	
4-Bromofluorobenzene	0.0530	0.0300	177	80-120	*

Lab Batch #: 765019

Sample: 337025-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 08:17

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0308	0.0300	103	80-120	
4-Bromofluorobenzene	0.0397	0.0300	132	80-120	**

Lab Batch #: 765019

Sample: 337025-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 08:39

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0304	0.0300	101	80-120	
4-Bromofluorobenzene	0.0368	0.0300	123	80-120	**

Lab Batch #: 765081

Sample: 533433-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/10/09 09:22

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0304	0.0300	101	80-120	
4-Bromofluorobenzene	0.0366	0.0300	122	80-120	*

Lab Batch #: 765081

Sample: 533433-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/10/09 09:43

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0361	0.0300	120	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765081

Sample: 533433-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/10/09 10:26

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0264	0.0300	88	80-120	
4-Bromofluorobenzene	0.0294	0.0300	98	80-120	

Lab Batch #: 765081

Sample: 337175-018 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 11:30

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0263	0.0300	88	80-120	
4-Bromofluorobenzene	0.0307	0.0300	102	80-120	

Lab Batch #: 765081

Sample: 337175-019 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 11:52

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0235	0.0300	78	80-120	*
4-Bromofluorobenzene	0.0342	0.0300	114	80-120	

Lab Batch #: 765081

Sample: 337175-020 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 12:13

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0237	0.0300	79	80-120	*
4-Bromofluorobenzene	0.0304	0.0300	101	80-120	

Lab Batch #: 765081

Sample: 337175-021 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 12:35

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0236	0.0300	79	80-120	*
4-Bromofluorobenzene	0.0389	0.0300	130	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765081

Sample: 337175-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 13:18

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0254	0.0300	85	80-120	
4-Bromofluorobenzene	0.0368	0.0300	123	80-120	*

Lab Batch #: 765081

Sample: 337175-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 13:39

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0233	0.0300	78	80-120	*
4-Bromofluorobenzene	0.0346	0.0300	115	80-120	

Lab Batch #: 765200

Sample: 533475-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/12/09 08:45

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0312	0.0300	104	80-120	
4-Bromofluorobenzene	0.0356	0.0300	119	80-120	

Lab Batch #: 765200

Sample: 533475-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/12/09 09:46

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0155	0.0300	52	80-120	**

Lab Batch #: 765200

Sample: 337175-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/12/09 12:50

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0265	0.0300	88	80-120	
4-Bromofluorobenzene	0.0353	0.0300	118	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765200

Sample: 337175-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/12/09 15:18

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0262	0.0300	87	80-120	
4-Bromofluorobenzene	0.0443	0.0300	148	80-120	*

Lab Batch #: 765200

Sample: 337175-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/12/09 15:37

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0248	0.0300	83	80-120	
4-Bromofluorobenzene	0.0603	0.0300	201	80-120	*

Lab Batch #: 765200

Sample: 337175-014 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/12/09 15:55

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0262	0.0300	87	80-120	
4-Bromofluorobenzene	0.0334	0.0300	111	80-120	

Lab Batch #: 765200

Sample: 337175-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/12/09 16:14

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0268	0.0300	89	80-120	
4-Bromofluorobenzene	0.0419	0.0300	140	80-120	*

Lab Batch #: 765200

Sample: 337713-006 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/12/09 16:50

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0313	0.0300	104	80-120	
4-Bromofluorobenzene	0.0403	0.0300	134	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765200

Sample: 337713-006 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/12/09 17:09

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0316	0.0300	105	80-120	
4-Bromofluorobenzene	0.0384	0.0300	128	80-120	*

Lab Batch #: 765231

Sample: 533520-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/09 02:42

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0313	0.0300	104	80-120	
4-Bromofluorobenzene	0.0350	0.0300	117	80-120	

Lab Batch #: 765231

Sample: 533520-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/09 03:00

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0347	0.0300	116	80-120	

Lab Batch #: 765231

Sample: 533520-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/09 03:36

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0279	0.0300	93	80-120	
4-Bromofluorobenzene	0.0159	0.0300	53	80-120	*

Lab Batch #: 765231

Sample: 337175-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/09 08:35

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0380	0.0300	127	80-120	**
4-Bromofluorobenzene	0.0361	0.0300	120	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765231

Sample: 337175-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/09 09:31

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0234	0.0300	78	80-120	**
4-Bromofluorobenzene	0.0424	0.0300	141	80-120	**

Lab Batch #: 765231

Sample: 337175-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/09 10:08

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0245	0.0300	82	80-120	
4-Bromofluorobenzene	0.0507	0.0300	169	80-120	**

Lab Batch #: 765231

Sample: 337719-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/09 10:44

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0362	0.0300	121	80-120	*

Lab Batch #: 765231

Sample: 337719-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/09 11:03

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0316	0.0300	105	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

Lab Batch #: 765323

Sample: 533559-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/09 21:32

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0316	0.0300	105	80-120	
4-Bromofluorobenzene	0.0368	0.0300	123	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765323

Sample: 533559-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/09 21:50

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0316	0.0300	105	80-120	
4-Bromofluorobenzene	0.0362	0.0300	121	80-120	*

Lab Batch #: 765323

Sample: 533559-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/13/09 22:27

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0280	0.0300	93	80-120	
4-Bromofluorobenzene	0.0164	0.0300	55	80-120	*

Lab Batch #: 765323

Sample: 337175-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/13/09 22:46

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0268	0.0300	89	80-120	
4-Bromofluorobenzene	0.0330	0.0300	110	80-120	

Lab Batch #: 765323

Sample: 337175-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/09 00:55

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0246	0.0300	82	80-120	
4-Bromofluorobenzene	0.0675	0.0300	225	80-120	**

Lab Batch #: 765323

Sample: 337175-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/09 01:13

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0245	0.0300	82	80-120	
4-Bromofluorobenzene	0.0532	0.0300	177	80-120	**

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 765323

Sample: 337175-017 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/09 02:26

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0254	0.0300	85	80-120	
4-Bromofluorobenzene	0.0341	0.0300	114	80-120	

Lab Batch #: 765323

Sample: 337175-012 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/09 05:31

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0393	0.0300	131	80-120	*

Lab Batch #: 765323

Sample: 337175-012 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/14/09 07:37

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0322	0.0300	107	80-120	
4-Bromofluorobenzene	0.0383	0.0300	128	80-120	*

Lab Batch #: 764775

Sample: 533254-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/07/09 11:21

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	111	100	111	70-135	
o-Terphenyl	43.9	50.0	88	70-135	

Lab Batch #: 764775

Sample: 533254-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/07/09 11:46

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	107	100	107	70-135	
o-Terphenyl	41.4	50.0	83	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 764775

Sample: 533254-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/07/09 12:12

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	96.0	100	96	70-135	
o-Terphenyl	45.3	50.0	91	70-135	

Lab Batch #: 764775

Sample: 337175-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 18:57

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	95.9	100	96	70-135	
o-Terphenyl	42.5	50.0	85	70-135	

Lab Batch #: 764775

Sample: 337175-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 19:22

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	103	99.8	103	70-135	
o-Terphenyl	48.2	49.9	97	70-135	

Lab Batch #: 764775

Sample: 337175-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 19:47

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	130	100	130	70-135	
o-Terphenyl	51.7	50.0	103	70-135	

Lab Batch #: 764775

Sample: 337175-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 20:12

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	104	100	104	70-135	
o-Terphenyl	51.8	50.0	104	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 764775

Sample: 337175-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 20:37

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	103	99.5	104	70-135	
o-Terphenyl	49.3	49.8	99	70-135	

Lab Batch #: 764775

Sample: 337175-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 21:02

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	99.6	100	100	70-135	
o-Terphenyl	48.0	50.0	96	70-135	

Lab Batch #: 764775

Sample: 337224-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 21:26

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	129	100	129	70-135	
o-Terphenyl	51.9	50.0	104	70-135	

Lab Batch #: 764775

Sample: 337224-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/07/09 21:51

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	129	99.9	129	70-135	
o-Terphenyl	47.5	50.0	95	70-135	

Lab Batch #: 764777

Sample: 533256-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/08/09 00:20

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	113	100	113	70-135	
o-Terphenyl	45.0	50.0	90	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 764777

Sample: 533256-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/08/09 00:45

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	118	100	118	70-135	
o-Terphenyl	46.5	50.0	93	70-135	

Lab Batch #: 764777

Sample: 533256-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/08/09 01:11

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	99.8	100	100	70-135	
o-Terphenyl	49.0	50.0	98	70-135	

Lab Batch #: 764777

Sample: 337175-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 01:35

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	103	100	103	70-135	
o-Terphenyl	49.8	50.0	100	70-135	

Lab Batch #: 764777

Sample: 337175-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 02:01

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	109	100	109	70-135	
o-Terphenyl	47.0	50.0	94	70-135	

Lab Batch #: 764777

Sample: 337175-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 02:26

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	109	100	109	70-135	
o-Terphenyl	51.1	50.0	102	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 764777

Sample: 337175-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 02:52

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	94.0	99.7	94	70-135	
o-Terphenyl	44.5	49.9	89	70-135	

Lab Batch #: 764777

Sample: 337175-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 03:16

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	100	99.9	100	70-135	
o-Terphenyl	47.6	50.0	95	70-135	

Lab Batch #: 764777

Sample: 337175-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 03:41

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	98.0	100	98	70-135	
o-Terphenyl	46.4	50.0	93	70-135	

Lab Batch #: 764777

Sample: 337175-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 04:06

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	103	99.7	103	70-135	
o-Terphenyl	49.4	49.9	99	70-135	

Lab Batch #: 764777

Sample: 337175-014 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 04:30

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	98.5	100	99	70-135	
o-Terphenyl	47.7	50.0	95	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 764777

Sample: 337175-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 04:55

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	113	99.8	113	70-135	
o-Terphenyl	46.4	49.9	93	70-135	

Lab Batch #: 764777

Sample: 337175-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 05:20

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	102	99.8	102	70-135	
o-Terphenyl	47.7	49.9	96	70-135	

Lab Batch #: 764777

Sample: 337175-017 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 06:10

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	111	100	111	70-135	
o-Terphenyl	50.7	50.0	101	70-135	

Lab Batch #: 764777

Sample: 337175-018 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 06:35

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	101	100	101	70-135	
o-Terphenyl	48.8	50.0	98	70-135	

Lab Batch #: 764777

Sample: 337175-019 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 06:59

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	99.8	99.5	100	70-135	
o-Terphenyl	48.0	49.8	96	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal- Legacy

Work Orders : 337175,

Project ID: 2009-092

Lab Batch #: 764777

Sample: 337175-020 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 07:24

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	98.3	100	98	70-135	
o-Terphenyl	46.6	50.0	93	70-135	

Lab Batch #: 764777

Sample: 337175-021 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 07:48

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	101	100	101	70-135	
o-Terphenyl	48.9	50.0	98	70-135	

Lab Batch #: 764777

Sample: 337175-007 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 10:17

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	114	100	114	70-135	
o-Terphenyl	46.5	50.0	93	70-135	

Lab Batch #: 764777

Sample: 337175-007 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 10:42

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	115	100	115	70-135	
o-Terphenyl	47.7	50.0	95	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



# Blank Spike Recovery



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Project ID:

2009-092

Lab Batch #: 765200

Sample: 533475-1-BKS

Matrix: Solid

Date Analyzed: 07/12/2009

Date Prepared: 07/11/2009

Analyst: BRB

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	ND	0.1000	0.0928	93	70-130	
Toluene	ND	0.1000	0.0886	89	70-130	
Ethylbenzene	ND	0.1000	0.0979	98	71-129	
m,p-Xylenes	ND	0.2000	0.1979	99	70-135	
o-Xylene	ND	0.1000	0.0942	94	71-133	

Lab Batch #: 767305

Sample: 767305-1-BKS

Matrix: Solid

Date Analyzed: 07/31/2009

Date Prepared: 07/31/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	9.70	97	80-120	

Lab Batch #: 767307

Sample: 767307-1-BKS

Matrix: Solid

Date Analyzed: 07/31/2009

Date Prepared: 07/31/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	9.14	91	80-120	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

- Below Reporting Limit



## BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Analyst: BRB

Lab Batch ID: 765019

Sample: 533394-1-BKS

Units: mg/kg

Project ID: 2009-092

Date Analyzed: 07/09/2009

Matrix: Solid

Date Prepared: 07/09/2009

Batch #: 1

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0776	78	0.1	0.0799	80	3	70-130	35
	Toluene	ND	0.1000	0.0738	74	0.1	0.0759	76	3	70-130	35
	Ethylbenzene	ND	0.1000	0.0813	81	0.1	0.0840	84	3	71-129	35
	m,p-Xylenes	ND	0.2000	0.1665	83	0.2	0.1716	86	3	70-135	35
	o-Xylene	ND	0.1000	0.0793	79	0.1	0.0809	81	2	71-133	35

Analyst: BRB

Lab Batch ID: 765081

Sample: 533433-1-BKS

Units: mg/kg

Date Prepared: 07/09/2009

Batch #: 1

Date Analyzed: 07/10/2009

Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0787	79	0.1	0.0802	80	2	70-130	35
	Toluene	ND	0.1000	0.0751	75	0.1	0.0766	77	2	70-130	35
	Ethylbenzene	ND	0.1000	0.0845	85	0.1	0.0859	86	2	71-129	35
	m,p-Xylenes	ND	0.2000	0.1724	86	0.2	0.1751	88	2	70-135	35
	o-Xylene	ND	0.1000	0.0813	81	0.1	0.0827	83	2	71-133	35

Relative Percent Difference RPD =  $200 * (C-F) / (C+F)$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



# BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Analyst: BRB

Lab Batch ID: 765231

Sample: 533520-1-BKS

Units: mg/kg

Project ID: 2009-092

Date Analyzed: 07/13/2009

Matrix: Solid

Date Prepared: 07/11/2009

Batch #: 1

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Analytes	BTEX by EPA 8021B										
	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0896	90	0.1	0.0916	92	2	70-130	35
	Toluene	ND	0.1000	0.0848	85	0.1	0.0868	87	2	70-130	35
	Ethylbenzene	ND	0.1000	0.0941	94	0.1	0.0959	96	2	71-129	35
	m,p-Xylenes	ND	0.2000	0.1876	94	0.2	0.1918	96	2	70-135	35
	o-Xylene	ND	0.1000	0.0896	90	0.1	0.0912	91	2	71-133	35

Analyst: ASA

Date Prepared: 07/11/2009

Date Analyzed: 07/13/2009

Lab Batch ID: 765323

Sample: 533559-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY														
Units: mg/kg	BTEX by EPA 8021B	Analytes	Blank Sample Result	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate Result	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag	
			[A]	[B]	[C]	[D]	[E]	[F]	[G]					

Relative Percent Difference RPD =  $200 * [(C-F)/(C+F)]$

Blank Spike Recovery [D] =  $100 * (C)/(B)$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/(E)$

All results are based on MDL and Validated for QC Purposes



# BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Analyst: BHW

Lab Batch ID: 764775

Sample: 533254-1-BKS

Date Prepared: 07/07/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 07/07/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TPH By SW8015 Mod		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		C6-C12 Gasoline Range Hydrocarbons	ND	1000	865	87	1000	842	84	3	70-135	35
		C12-C28 Diesel Range Hydrocarbons	ND	1000	1020	102	1000	970	97	5	70-135	35

Analyst: BHW

Lab Batch ID: 764777

Sample: 533256-1-BKS

Date Prepared: 07/07/2009

Batch #: 1

Date Analyzed: 07/08/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Units: mg/kg											
Analytes	TPH By SW8015 Mod										
	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	ND	1000	870	87	1000	916	92	5	70-135	35	
	ND	1000	1030	103	1000	1070	107	4	70-135	35	

Relative Percent Difference RPD =  $200 * [(C-F)/(C+F)]$

Blank Spike Recovery [D] =  $100 * (C)/[B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F)/[E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MS Recoveries



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Lab Batch #: 767305

Date Analyzed: 07/31/2009

Date Prepared: 07/31/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 339247-001 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	157	212	386	108	80-120	

Lab Batch #: 767307

Date Analyzed: 07/31/2009

Date Prepared: 07/31/2009

Analyst: LATCOR

QC- Sample ID: 337175-017 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	54.4	111	158	93	80-120	

Matrix Spike Percent Recovery [D] =  $100 \times (C-A)/B$   
Relative Percent Difference [E] =  $200 \times (C-A)/(C+B)$   
All Results are based on MDL and Validated for QC Purposes

- Below Reporting Limit





# Form 3 - MSD Recoveries



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Lab Batch ID: 765019

Date Analyzed: 07/10/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 337025-001 S

Batch #: 1 Matrix: Soil

Date Prepared: 07/09/2009 Analyst: BRB

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0.1006	0.0715	71	0.1006	0.0767	76	7	70-130	35	
Toluene	ND	0.1006	0.0692	69	0.1006	0.0731	73	5	70-130	35	X
Ethylbenzene	ND	0.1006	0.0781	78	0.1006	0.0807	80	3	71-129	35	
m,p-Xylenes	ND	0.2012	0.1601	80	0.2012	0.1638	81	2	70-135	35	
o-Xylene	ND	0.1006	0.0751	75	0.1006	0.0770	77	2	71-133	35	

Lab Batch ID: 765200

Date Analyzed: 07/12/2009

Reporting Units: mg/kg

QC- Sample ID: 337713-006 S

Batch #: 1 Matrix: Soil

Date Prepared: 07/11/2009 Analyst: BRB

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	ND	0.1123	0.0720	64	0.1123	0.0742	66	3	70-130	35	X
Toluene	ND	0.1123	0.0765	68	0.1123	0.0779	69	2	70-130	35	X
Ethylbenzene	ND	0.1123	0.0867	77	0.1123	0.0866	77	0	71-129	35	
m,p-Xylenes	ND	0.2247	0.1789	80	0.2247	0.1776	79	1	70-135	35	
o-Xylene	ND	0.1123	0.0850	76	0.1123	0.0840	75	1	71-133	35	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times |(C-F)/(C+F)|$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit



# Form 3 - MSD Recoveries



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Lab Batch ID: 765231

Date Analyzed: 07/13/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 337719-001 S

Batch #: 1 Matrix: Soil

Date Prepared: 07/11/2009 Analyst: BRB

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
Reporting Units: mg/kg	BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1025	0.0713	70	0.1025	0.0682	67	4	70-130	35	X
	Toluene	ND	0.1025	0.0592	58	0.1025	0.0499	49	17	70-130	35	X
	Ethylbenzene	ND	0.1025	0.0615	60	0.1025	0.0417	41	38	71-129	35	XF
	m,p-Xylenes	ND	0.2050	0.1225	60	0.2050	0.0824	40	39	70-135	35	XF
	o-Xylene	ND	0.1025	0.0583	57	0.1025	0.0372	36	44	71-133	35	XF

Lab Batch ID: 765323

Date Analyzed: 07/14/2009

Reporting Units: mg/kg

QC- Sample ID: 337175-012 S

Batch #: 1 Matrix: Soil

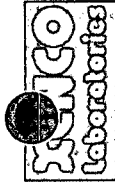
Date Prepared: 07/11/2009 Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
Reporting Units: mg/kg	BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %RPD	Flag
	Benzene	ND	0.1058	0.0838	79	0.1058	0.0820	78	2	70-130	35
	Toluene	ND	0.1058	0.0765	72	0.1058	0.0731	69	5	70-130	35 X
	Ethylbenzene	ND	0.1058	0.0796	75	0.1058	0.0731	69	9	71-129	35 X
	m,p-Xylenes	ND	0.2116	0.1580	75	0.2116	0.1470	69	7	70-135	35 X
	o-Xylene	ND	0.1058	0.0780	74	0.1058	0.0709	67	10	71-133	35 X

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times (C-F)/(C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$



# Form 3 - MSD Recoveries



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Lab Batch ID: 764775

Date Analyzed: 07/07/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 337224-001 S

Batch #: 1 Matrix: Soil

Date Prepared: 07/07/2009 Analyst: BHW

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
Reporting Units: mg/kg											
TPH By SW8015 Mod	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
C6-C12 Gasoline Range Hydrocarbons	729	1130	1840	98	1130	1870	101	2	70-135	35	
C12-C28 Diesel Range Hydrocarbons	3940	1130	5230	114	1130	5440	133	4	70-135	35	

Lab Batch ID: 764777

Date Analyzed: 07/08/2009

Reporting Units: mg/kg

QC- Sample ID: 337175-007 S

Batch #: 1 Matrix: Soil

Date Prepared: 07/07/2009 Analyst: BHW

Reporting Units: mg/kg											
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
TPH By SW8015 Mod  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	25.8	1050	916	85	1050	915	85	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons	392	1050	1430	99	1050	1390	95	3	70-135	35	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times (C-F)/(C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$



## Sample Duplicate Recovery



Project Name: 14-Inch Vac to Jal- Legacy

Work Order #: 337175

Lab Batch #: 767305

Date Analyzed: 07/31/2009

QC- Sample ID: 339247-001 D

Reporting Units: mg/kg

Date Prepared: 07/31/2009

Batch #: 1

Project ID: 2009-092

Analyst: LATCOR

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	157	166	6	20	

Lab Batch #: 767307

Date Analyzed: 07/31/2009

QC- Sample ID: 337175-017 D

Reporting Units: mg/kg

Date Prepared: 07/31/2009

Batch #: 1

Analyst: LATCOR

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	54.4	50.6	3	20	

Lab Batch #: 764625

Date Analyzed: 07/06/2009

QC- Sample ID: 337166-001 D

Reporting Units: %

Date Prepared: 07/06/2009

Batch #: 1

Analyst: LATCOR

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	3.72	4.09	9	20	

Lab Batch #: 764626

Date Analyzed: 07/06/2009

QC- Sample ID: 337175-008 D

Reporting Units: %

Date Prepared: 07/06/2009

Batch #: 1

Analyst: LATCOR

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	10.5	11.0	5	20	

Spike Relative Difference  $RPD = 200 * |(B-A)/(B+A)|$   
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit







**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Basin Env. / Plains  
Date/ Time: 7-6-09 12:35  
Lab ID #: 337175  
Initials: CL

**Sample Receipt Checklist**

Client Initials

#1 Temperature of container/ cooler?	<u>Yes</u>	No	<u>4.1</u> °C	
#2 Shipping container in good condition?	<u>Yes</u>	No		
#3 Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	<u>Not Present</u>	
#4 Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	Not Present	
#5 Chain of Custody present?	<u>Yes</u>	No		
#6 Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#7 Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#8 Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No	ID written on Cont./ Lid	
#9 Container label(s) legible and intact?	<u>Yes</u>	No	Not Applicable	
#10 Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#11 Containers supplied by ELDT?	<u>Yes</u>	No		
#12 Samples in proper container/ bottle?	<u>Yes</u>	No	See Below	
#13 Samples properly preserved?	<u>Yes</u>	No	See Below	
#14 Sample bottles intact?	<u>Yes</u>	No		
#15 Preservations documented on Chain of Custody?	<u>Yes</u>	No		
#16 Containers documented on Chain of Custody?	<u>Yes</u>	No		
#17 Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No	See Below	
#18 All samples received within sufficient hold time?	<u>Yes</u>	No	See Below	
#19 Subcontract of sample(s)?	<u>Yes</u>	No	<u>Not Applicable</u>	
#20 VOC samples have zero headspace?	<u>Yes</u>	No	Not Applicable	

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event



**Gracie Avalos**

**From:** Camille J. Bryant [cjbrant@basin-consulting.com]  
**Sent:** Friday, July 31, 2009 2:15 PM  
**To:** Gracie Avalos  
**Subject:** Re: WO 337175 / 14-Inch Vac to Jal - Legacy

Gracie,

Please conduct chloride concentration sampling on all the submitted soil samples by method 300.

Thanks,  
Camille Bryant  
Basin Environmental Consulting


----- Original Message -----

**From:** Gracie Avalos  
**To:** 'Camille J. Bryant' ; cstankley@basinenv.com  
**Cc:** Jason Henry  
**Sent:** Tuesday, July 14, 2009 12:18 PM  
**Subject:** WO 337175 / 14-Inch Vac to Jal - Legacy

Gracie Avalos  
Project Assistant  
Xenco Labs - Odessa  
432-563-1800 Office  
432-4563-1713 Fax  
gracie.avalos@xenco.com

**CONFIDENTIALITY STATEMENT**

This electronic message contains information from the XENCO Laboratories and is confidential or privileged. The information is intended to be for the use of the individual or entity named above. If you are not the intended recipient, be aware that any disclosure, copying, distribution or use of the contents of this message is prohibited. If you have received this electronic message in error, please notify us immediately by telephone.

 Please consider the environment before printing this email.

7/31/2009

# Analytical Report 337279

for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14-Inch Vac to Jal - Legacy**

**2009-092**

**04-AUG-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Miramar (EPA Lab code: FL01246): Florida (E86349)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Houston - Dallas - San Antonio - Tampa - Miami - Midland - Corpus Christi - Atlanta - Latin America



04-AUG-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **337279**  
**14-Inch Vac to Jal - Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 337279. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 337279 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



**Sample Cross Reference 337279**



**PLAINS ALL AMERICAN EH&S, Midland, TX**

14-Inch Vac to Jal - Legacy

**Sample Id**

SB-3 @ 60'

**Matrix**

S

**Date Collected**

Jul-02-09 12:35

**Sample Depth**

**Lab Sample Id**

337279-001



## CASE NARRATIVE

**Client Name:** PLAINS ALL AMERICAN EH&S

**Project Name:** 14-Inch Vac to Jal - Legacy

**Project ID:** 2009-092

**Work Order Number:** 337279

**Report Date:** 04-AUG-09

**Date Received:** 07/07/2009

---

### **Sample receipt non conformances and Comments:**

Per client's request, Chloride by E300 is to be analyzed although sample 337279-001 (soil) expired 07/30/09. Lab will proceed with 07/31/09 request.

---

### **Sample receipt Non Conformances and Comments per Sample:**

None

#### **Analytical Non Conformances and Comments:**

Batch: LBA-764742 Percent Moisture

None

Batch: LBA-764867 TPH by SW8015 Mod

None

Batch: LBA-765081 BTEX-MTBE EPA 8021B

SW8021BM

Batch 765081, 4-Bromofluorobenzene recovered above QC limits Data not confirmed by re-analysis. Samples affected are: 533433-1-BKS,337279-001. Matrix interference is suspected.

Batch: LBA-767458 Inorganic Anions by EPA 300

E300



# Certificate of Analysis Summary 337279

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Name: 14-Inch Vac to Jal - Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Tue Jul-07-09 10:15 am

Report Date: 04-AUG-09

Project Manager: Brent Barron, II

<b>Analysis Requested</b>		<b>Lab Id:</b> <b>Field Id:</b> <b>Depth:</b> <b>Matrix:</b> <b>Sampled:</b>	337279-001 SB-3 @ 60' SOIL Jul-02-09 12:35			
<b>Anions by EPA 300</b>		<b>Extracted:</b> <b>Analyzed:</b> <b>Units/RL:</b>	 Aug-03-09 19:34 mg/kg RL			
Chloride			46.1 5.13			
<b>BTEX by EPA 8021B</b>		<b>Extracted:</b> <b>Analyzed:</b> <b>Units/RL:</b>	 Jul-09-09 17:00 Jul-10-09 12:56 mg/kg RL			
Benzene			ND 0.0010			
Toluene			ND 0.0021			
Ethylbenzene			0.0038 0.0010			
m,p-Xylenes			0.0087 0.0021			
o-Xylene			0.0041 0.0010			
Total Xylenes			0.0128 0.0010			
Total BTEX			0.0166 0.0010			
<b>Percent Moisture</b>		<b>Extracted:</b> <b>Analyzed:</b> <b>Units/RL:</b>	 Jul-07-09 16:00 % RL			
Percent Moisture			2.46 1.00			
<b>TPH By SW8015 Mod</b>		<b>Extracted:</b> <b>Analyzed:</b> <b>Units/RL:</b>	 Jul-08-09 13:39 Jul-08-09 16:22 mg/kg RL			
C6-C12 Gasoline Range Hydrocarbons			23.7 15.4			
C12-C28 Diesel Range Hydrocarbons			126 15.4			
C28-C35 Oil Range Hydrocarbons			18.5 15.4			
Total TPH			168.2 15.4			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
 9701 Harry Hines Blvd , Dallas, TX 75220  
 5332 Blackberry Drive, San Antonio TX 78238  
 2505 North Falkenburg Rd, Tampa, FL 33619  
 5757 NW 158th St, Miami Lakes, FL 33014  
 12600 West I-20 East, Odessa, TX 79765  
 842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 337279,

Project ID: 2009-092

Lab Batch #: 765081

Sample: 533433-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/10/09 09:22

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0304	0.0300	101	80-120	
4-Bromofluorobenzene	0.0366	0.0300	122	80-120	*

Lab Batch #: 765081

Sample: 533433-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/10/09 09:43

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0305	0.0300	102	80-120	
4-Bromofluorobenzene	0.0361	0.0300	120	80-120	

Lab Batch #: 765081

Sample: 533433-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/10/09 10:26

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0264	0.0300	88	80-120	
4-Bromofluorobenzene	0.0294	0.0300	98	80-120	

Lab Batch #: 765081

Sample: 337279-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/10/09 12:56

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0254	0.0300	85	80-120	
4-Bromofluorobenzene	0.0385	0.0300	128	80-120	*

Lab Batch #: 764867

Sample: 533304-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/08/09 15:03

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	121	100	121	70-135	
o-Terphenyl	53.0	50.0	106	70-135	

\* Surrogate outside of Laboratory QC limits

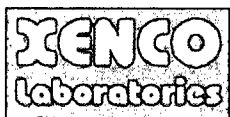
\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Orders : 337279,

Project ID: 2009-092

Lab Batch #: 764867

Sample: 533304-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/08/09 15:30

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	120	100	120	70-135	
o-Terphenyl	51.6	50.0	103	70-135	

Lab Batch #: 764867

Sample: 533304-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 07/08/09 15:56

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	112	100	112	70-135	
o-Terphenyl	55.5	50.0	111	70-135	

Lab Batch #: 764867

Sample: 337279-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 16:22

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	108	99.9	108	70-135	
o-Terphenyl	55.1	50.0	110	70-135	

Lab Batch #: 764867

Sample: 337279-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 19:25

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	126	100	126	70-135	
o-Terphenyl	54.7	50.0	109	70-135	

Lab Batch #: 764867

Sample: 337279-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 07/08/09 19:51

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	129	99.9	129	70-135	
o-Terphenyl	54.2	50.0	108	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



# Blank Spike Recovery



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 337279

Project ID:

2009-092

Lab Batch #: 767458

Sample: 767458-1-BKS

Matrix: Solid

Date Analyzed: 08/03/2009

Date Prepared: 08/03/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	9.93	99	80-120	

Blank Spike Recovery [D] =  $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

L - Below Reporting Limit



## BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 337279

Analyst: BRB

Lab Batch ID: 765081

Sample: 533433-1-BKS

Date Prepared: 07/09/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 07/10/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0787	79	0.1	0.0802	80	2	70-130	35
	Toluene	ND	0.1000	0.0751	75	0.1	0.0766	77	2	70-130	35
	Ethylbenzene	ND	0.1000	0.0845	85	0.1	0.0859	86	2	71-129	35
	m,p-Xylenes	ND	0.2000	0.1724	86	0.2	0.1751	88	2	70-135	35
	o-Xylene	ND	0.1000	0.0813	81	0.1	0.0827	83	2	71-133	35

Analyst: BHW

Date Prepared: 07/08/2009

Date Analyzed: 07/08/2009

Lab Batch ID: 764867

Sample: 533304-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
TPH By SW8015 Mod	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
C6-C12 Gasoline Range Hydrocarbons	ND	1000	816	82	1000	818	82	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons	ND	1000	848	85	1000	843	84	1	70-135	35	

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



### Form 3 - MS Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 337279

Lab Batch #: 767458

Date Analyzed: 08/03/2009

Date Prepared: 08/03/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 337279-001 S

Batch #: 1

Matrix: Soil

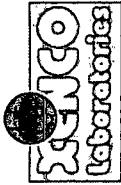
Reporting Units: mg/kg

#### MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300		Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes							
Chloride		46.1	103	150	101	80-120	

Matrix Spike Percent Recovery [D] =  $100 \times (C-A)/B$   
Relative Percent Difference [E] =  $200 \times (C-A)/(C+B)$   
All Results are based on MDL and Validated for QC Purposes

- Below Reporting Limit



# Form 3 - MSD Recoveries

Project Name: 14-Inch Vac to Jal - Legacy

Work Order # : 337279

Lab Batch ID: 764867

Date Analyzed: 07/08/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 337279-001 S

Batch #: 1 Matrix: Soil

Date Prepared: 07/08/2009 Analyst: BHW

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
Reporting Units: mg/kg											
TPH By SW8015 Mod	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
C6-C12 Gasoline Range Hydrocarbons	23.7	1030	872	82	1020	891	85	2	70-135	35	
C12-C28 Diesel Range Hydrocarbons	126	1030	1040	89	1020	1060	92	2	70-135	35	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times (C-F)/(C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$



## Sample Duplicate Recovery



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 337279

Lab Batch #: 767458

Date Analyzed: 08/03/2009

QC- Sample ID: 337279-001 D

Reporting Units: mg/kg

Date Prepared: 08/03/2009

Batch #: 1

Project ID: 2009-092

Analyst: LATCOR

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	46.1	45.4	2	20	

Lab Batch #: 764742

Date Analyzed: 07/07/2009

QC- Sample ID: 337200-001 D

Reporting Units: %

Date Prepared: 07/07/2009

Batch #: 1

Analyst: BEV

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	4.27	3.58	18	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Boson / Perkins  
Date/ Time: 12/07/09 10:45  
Lab ID #: 337279  
Initials: MLB

**Sample Receipt Checklist**

Client Initials

#1 Temperature of container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	1.4 °C	
#2 Shipping container in good condition?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#3 Custody Seals intact on shipping container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Present	
#4 Custody Seals intact on sample bottles/ container?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Present	
#5 Chain of Custody present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#6 Sample instructions complete of Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#7 Chain of Custody signed when relinquished/ received?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#8 Chain of Custody agrees with sample label(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	ID written on Cont./ Lid	
#9 Container label(s) legible and intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	
#10 Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#11 Containers supplied by ELOT?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#12 Samples in proper container/ bottle?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#13 Samples properly preserved?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#14 Sample bottles intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#15 Preservations documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#16 Containers documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#17 Sufficient sample amount for indicated test(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#18 All samples received within sufficient hold time?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#19 Subcontract of sample(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	
#20 VOC samples have zero headspace?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event



**Gracie Avalos**

**From:** Camille J. Bryant [cjbrant@basin-consulting.com]  
**Sent:** Friday, July 31, 2009 2:16 PM  
**To:** Gracie Avalos  
**Subject:** Re: WO 337279 / 14-Inch Vac to Jal - Legacy

Gracie,

Please conduct chloride concentration sampling on the submitted soil sample using method 300.

Thanks,  
Camille Bryant  
Basin Environmental Consulting


----- Original Message -----

**From:** Gracie Avalos  
**To:** 'Camille J. Bryant'; cstanley@basinenv.com; Jason Henry  
**Sent:** Monday, July 13, 2009 9:12 AM  
**Subject:** WO 337279 / 14-Inch Vac to Jal - Legacy

Gracie Avalos  
Project Assistant  
Xenco Labs - Odessa  
432-563-1800 Office  
432-4563-1713 Fax  
[gracie.avalos@xenco.com](mailto:gracie.avalos@xenco.com)

**CONFIDENTIALITY STATEMENT**

This electronic message contains information from the XENCO Laboratories and is confidential or privileged. The information is intended to be for the use of the individual or entity named above. If you are not the intended recipient, be aware that any disclosure, copying, distribution or use of the contents of this message is prohibited. If you have received this electronic message in error, please notify us immediately by telephone.

 Please consider the environment before printing this email.

7/31/2009

# Analytical Report 346217

for

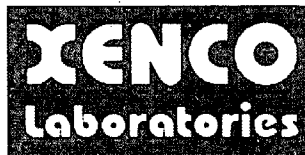
## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14-Inch Vac to Jal-Legacy**

**2009-092**

**30-SEP-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AAL11), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Xenco-Boca Raton (EPA Lab Code: FL00449): Florida (E86240),

South Carolina (96031001), Louisiana (04154), Georgia (917)



30-SEP-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **346217**  
**14-Inch Vac to Jal-Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 346217. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 346217 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



## Sample Cross Reference 346217



PLAINS ALL AMERICAN EH&S, Midland, TX

14-Inch Vac to Jal-Legacy

**Sample Id**

**Matrix**

**Date Collected**

**Sample Depth**

**Lab Sample Id**

Treatment Cell # 1

S

Sep-24-09 16:00

346217-001



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal-Legacy*

*Project ID: 2009-092*

*Work Order Number: 346217*

*Report Date: 30-SEP-09*

*Date Received: 09/28/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-774613 Percent Moisture

None

Batch: LBA-774863 TX1005

None

Batch: LBA-774935 BTEX-MTBE EPA 8021B

SW8021BM

Batch 774935, 1,4-Difluorobenzene recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis

Samples affected are: 346217-001.



**Certificate of Analysis Summary 346217**  
**PLAINS ALL AMERICAN EH&S, Midland, TX**  
**Project Name: 14-Inch Vac to Jal-Legacy**



Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea County, NM

Date Received in Lab: Mon Sep-28-09 09:35 am  
Report Date: 30-SEP-09  
Project Manager: Brent Barron, II

Analysis Requested	Lab Id:			346217-001 Treatment Cell # 1	SOIL	Sep-24-09 16:00
	Field Id:	Depth:	Matrix:			
BTEX by EPA 8021B	Sampled:					
	Extracted:	Sep-30-09 10:00				
	Analyzed:	Sep-30-09 15:50				
	Units/RL:	mg/kg RL				
	Benzene	1.539 0.2060				
	Toluene	31.40 0.4120				
Percent Moisture	Ethylbenzene	30.15 0.2060				
	m,p-Xylenes	51.23 0.4120				
	o-Xylene	21.99 0.2060				
	Total Xylenes	73.22 0.2060				
TPH By SW8015 Mod	Total BTEX	136.31 0.2060				
	Extracted:					
Percent Moisture	Analyzed:	Sep-29-09 09:07				
	Units/RL:	% RL				
C6-C12 Gasoline Range Hydrocarbons	Extracted:	2.92 1.00				
	Analyzed:	Sep-29-09 22:44				
C12-C28 Diesel Range Hydrocarbons	Extracted:	Sep-30-09 05:23				
	Analyzed:					
C28-C35 Oil Range Hydrocarbons	Units/RL:	mg/kg RL				
	C6-C12 Gasoline Range Hydrocarbons	2560 155				
Total TPH	C12-C28 Diesel Range Hydrocarbons	8530 155				
	C28-C35 Oil Range Hydrocarbons	220 155				
	Total TPH	11310 155				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd , Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal-Legacy

Work Orders : 346217,

Project ID: 2009-092

Lab Batch #: 774935

Sample: 539231-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 09/30/09 13:14

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0300	0.0300	100	80-120	
4-Bromofluorobenzene	0.0303	0.0300	101	80-120	

Lab Batch #: 774935

Sample: 539231-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 09/30/09 13:56

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0302	0.0300	101	80-120	

Lab Batch #: 774935

Sample: 346217-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 09/30/09 15:50

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0194	0.0300	65	80-120	**
4-Bromofluorobenzene	0.0317	0.0300	106	80-120	

Lab Batch #: 774863

Sample: 539177-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 09/29/09 23:36

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	85.0	100	85	70-135	
o-Terphenyl	36.1	50.0	72	70-135	

Lab Batch #: 774863

Sample: 539177-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 09/30/09 00:01

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	87.7	100	88	70-135	
o-Terphenyl	36.7	50.0	73	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal-Legacy

Work Orders : 346217,

Project ID: 2009-092

Lab Batch #: 774863

Sample: 539177-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 09/30/09 00:25

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	80.5	100	81	70-135	
o-Terphenyl	39.7	50.0	79	70-135	

Lab Batch #: 774863

Sample: 346217-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 09/30/09 05:23

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	119	100	119	70-135	
o-Terphenyl	41.4	50.0	83	70-135	

Lab Batch #: 774863

Sample: 345957-002 D / MD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 09/30/09 05:49

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	96.2	100	96	70-135	
o-Terphenyl	46.8	50.0	94	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



# Blank Spike Recovery



Project Name: 14-Inch Vac to Jal-Legacy

Work Order #: 346217

Project ID:

2009-092

Lab Batch #: 774935

Sample: 539231-1-BKS

Matrix: Solid

Date Analyzed: 09/30/2009

Date Prepared: 09/30/2009

Analyst: ASA

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Benzene	ND	0.1000	0.0926	93	70-130	
Toluene	ND	0.1000	0.0917	92	70-130	
Ethylbenzene	ND	0.1000	0.0941	94	71-129	
m,p-Xylenes	ND	0.2000	0.2057	103	70-135	
o-Xylene	ND	0.1000	0.0990	99	71-133	

Blank Spike Recovery [D] =  $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

L - Below Reporting Limit



BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal-Legacy

Work Order #: 346217

Analyst: BHW

Lab Batch ID: 774863

Sample: 539177-1-BKS

Units: mg/kg

Date Prepared: 09/29/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 09/29/2009

Matrix: Solid

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TPH By SW8015 Mod		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
C6-C12 Gasoline Range Hydrocarbons		ND	1000	848	85	1000	877	88	3	70-135	35	
C12-C28 Diesel Range Hydrocarbons		ND	1000	813	81	1000	846	85	4	70-135	35	

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



## Sample Duplicate Recovery



Project Name: 14-Inch Vac to Jal-Legacy

Work Order #: 346217

Lab Batch #: 774613

Project ID: 2009-092

Date Analyzed: 09/29/2009

Date Prepared: 09/29/2009

Analyst: BEV

QC- Sample ID: 346186-001 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	12.2	13.0	7	20	

Lab Batch #: 774863

Date Analyzed: 09/30/2009

Date Prepared: 09/29/2009

Analyst: BHW

QC- Sample ID: 345957-002 D

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TPH By SW8015 Mod	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
C6-C12 Gasoline Range Hydrocarbons	ND	ND	NC	35	
C12-C28 Diesel Range Hydrocarbons	36.0	39.3	9	35	
C28-C35 Oil Range Hydrocarbons	ND	ND	NC	35	

Spike Relative Difference  $RPD = 200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12800 West 1-20 East  
Odessa, Texas 79765

Phone: 432-583-1800  
Fax: 432-583-1713

Project Manager: Curt Stanley PAGE 01 OF 02

**Project Name: 14-Inch Vac to Jal - Legacy**

Company Name	Basin Environmental Service Technologies, LLC
--------------	---

Project #: 2009-092

Company Address: 2800 Plains Hwy

Project Location: Los County, NM

City/State/Zip: Lovington, NM 88260

PO #: PAA - J. Henry

Telephone No: (571) 441-2244

Fax No: (505) 396-1429

Report Format:

mm: ☒ Standard ☐ TRRP ☐ NDES

Sampler Signature: *[Signature]* e-mail: *h.f.stone@nyu.edu*

estanley@basineny.com

[illegible]

**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Basin Env. / Plains  
Date/ Time: 9.28.09 9:35  
Lab ID #: 346217  
Initials: CL

**Sample Receipt Checklist**

			Client Initials	
#1	Temperature of container/ cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.6	°C
#2	Shipping container in good condition?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<del>Not Present</del>	
#4	Custody Seals intact on sample bottles/ container?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not Present	
#5	Chain of Custody present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ID written on Cont / Lid	
#9	Container label(s) legible and intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#11	Containers supplied by ELOT?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#12	Samples in proper container/ bottle?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	See Below	
#13	Samples properly preserved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	See Below	
#14	Sample bottles intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#15	Preservations documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#16	Containers documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	See Below	
#18	All samples received within sufficient hold time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	See Below	
#19	Subcontract of sample(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<del>Not Applicable</del>	
#20	VOC samples have zero headspace?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not Applicable	

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# Analytical Report 346641

for

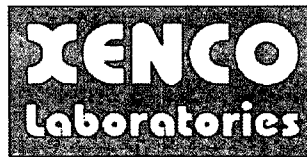
## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14" Vac to Jal - Legacy**

**2009-092**

**06-OCT-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Xenco-Boca Raton (EPA Lab Code: FL00449): Florida (E86240),

South Carolina (96031001), Louisiana (04154), Georgia (917)



06-OCT-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **346641**  
**14" Vac to Jal - Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 346641. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 346641 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America





## Sample Cross Reference 346641



PLAINS ALL AMERICAN EH&S, Midland, TX

14" Vac to Jal - Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
West Exc. NSW-1	S	Sep-30-09 16:00		346641-001
West Exc. WSW-1	S	Sep-30-09 16:05		346641-002
West Exc. SSW-1	S	Sep-30-09 16:10		346641-003
West Exc. Floor-1	S	Sep-30-09 16:15		346641-004
West Exc. Floor-2	S	Sep-30-09 16:20		346641-005



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14" Vac to Jal - Legacy*

*Project ID: 2009-092*

*Work Order Number: 346641*

*Report Date: 06-OCT-09*

*Date Received: 10/01/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-775229 Percent Moisture

None

Batch: LBA-775555 BTEX-MTBE EPA 8021B  
SW8021BM

Batch 775555, Benzene, Ethylbenzene, Toluene, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. m,p-Xylenes recovered below QC limits in the Matrix Spike Duplicate.

Samples affected are: 346641-001, -003, -002, -004, -005.

The Laboratory Control Sample for Toluene, m,p-Xylenes, Benzene, Ethylbenzene, o-Xylene is within laboratory Control Limits

Batch: LBA-775682 TPH by SW8015 Mod

None



# Certificate of Analysis Summary 346641

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092      Date Received in Lab: Thu Oct-01-09 07:35 am  
Contact: Jason Henry      Report Date: 06-OCT-09  
Project Location: Lea County, NM      Project Manager: Brent Barron, II

Project Name: 14" Vac to Jal - Legacy

Analysis Requested	Lab Id:	346641-001	346641-002	346641-003	346641-004	346641-005
	Field Id: Depth: Matrix: Sampled:	West Exc. NSW-1 Sep-30-09 16:00 SOIL	West Exc. WSW-1 Sep-30-09 16:05 SOIL	West Exc. SSW-1 Sep-30-09 16:10 SOIL	West Exc. Floor-1 Sep-30-09 16:15 SOIL	West Exc. Floor-2 Sep-30-09 16:20 SOIL
BTEX by EPA 8021B	Extracted:	Oct-02-09 16:15	Oct-02-09 16:15	Oct-02-09 16:15	Oct-02-09 16:15	Oct-02-09 16:15
	Analyzed:	Oct-03-09 14:50	Oct-03-09 15:12	Oct-03-09 15:32	Oct-03-09 15:54	Oct-03-09 16:15
Benzene	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
Toluene		ND 0.0022	ND 0.0024	ND 0.0023	ND 0.0023	ND 0.0024
		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
Ethylbenzene		ND 0.0022	ND 0.0024	ND 0.0023	ND 0.0023	ND 0.0024
		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
m,p-Xylenes		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
o-Xylene		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
Total Xylenes		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
Total BTEX		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
		ND 0.0011	ND 0.0012	ND 0.0011	ND 0.0012	ND 0.0012
Percent Moisture	Extracted:	Oct-02-09 09:28	Oct-02-09 09:28	Oct-02-09 09:28	Oct-02-09 09:28	Oct-02-09 09:28
	Analyzed:	% RL	% RL	% RL	% RL	% RL
TPH By SW8015 Mod	Units/RL:	9.99 1.00	18.1 1.00	12.6 1.00	14.6 1.00	16.6 1.00
		ND 16.7	ND 18.3	ND 17.2	ND 17.6	ND 18.0
C6-C12 Gasoline Range Hydrocarbons	Extracted:	Oct-04-09 14:52	Oct-04-09 14:52	Oct-04-09 14:52	Oct-04-09 14:52	Oct-04-09 14:52
	Analyzed:	Oct-05-09 14:02	Oct-05-09 14:28	Oct-05-09 14:53	Oct-05-09 15:18	Oct-05-09 15:43
C12-C28 Diesel Range Hydrocarbons	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
		ND 16.7	ND 18.3	ND 17.2	ND 17.6	ND 18.0
C28-C35 Oil Range Hydrocarbons		ND 16.7	ND 18.3	ND 17.2	ND 17.6	ND 18.0
		ND 16.7	ND 18.3	ND 17.2	ND 17.6	ND 18.0
Total TPH		ND 16.7	ND 18.3	ND 17.2	ND 17.6	ND 18.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990    Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

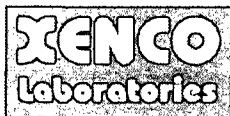
*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd, Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 346641,

Project ID: 2009-092

Lab Batch #: 775555

Sample: 539581-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/03/09 08:13

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0301	0.0300	100	80-120	
4-Bromofluorobenzene	0.0293	0.0300	98	80-120	

Lab Batch #: 775555

Sample: 539581-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/03/09 08:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0300	0.0300	100	80-120	
4-Bromofluorobenzene	0.0297	0.0300	99	80-120	

Lab Batch #: 775555

Sample: 539581-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/03/09 09:16

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0268	0.0300	89	80-120	
4-Bromofluorobenzene	0.0295	0.0300	98	80-120	

Lab Batch #: 775555

Sample: 346641-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/03/09 14:50

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0312	0.0300	104	80-120	

Lab Batch #: 775555

Sample: 346641-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/03/09 15:12

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0325	0.0300	108	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 346641,

Lab Batch #: 775555

Sample: 346641-003 / SMP

Project ID: 2009-092

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/03/09 15:32

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0308	0.0300	103	80-120	

Lab Batch #: 775555

Sample: 346641-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/03/09 15:54

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0268	0.0300	89	80-120	
4-Bromofluorobenzene	0.0316	0.0300	105	80-120	

Lab Batch #: 775555

Sample: 346641-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/03/09 16:15

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0271	0.0300	90	80-120	
4-Bromofluorobenzene	0.0316	0.0300	105	80-120	

Lab Batch #: 775555

Sample: 346856-006 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/03/09 18:21

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0284	0.0300	95	80-120	
4-Bromofluorobenzene	0.0314	0.0300	105	80-120	

Lab Batch #: 775555

Sample: 346856-006 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/03/09 18:42

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0322	0.0300	107	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 346641,

Project ID: 2009-092

Lab Batch #: 775682

Sample: 539683-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/05/09 11:57

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	91.3	100	91	70-135	
o-Terphenyl	35.4	50.0	71	70-135	

Lab Batch #: 775682

Sample: 539683-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/05/09 12:22

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	87.5	100	88	70-135	
o-Terphenyl	36.2	50.0	72	70-135	

Lab Batch #: 775682

Sample: 539683-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 10/05/09 12:47

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	75.5	100	76	70-135	
o-Terphenyl	36.7	50.0	73	70-135	

Lab Batch #: 775682

Sample: 346641-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/05/09 14:02

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	72.6	100	73	70-135	
o-Terphenyl	36.1	50.0	72	70-135	

Lab Batch #: 775682

Sample: 346641-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/05/09 14:28

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	73.3	100	73	70-135	
o-Terphenyl	35.6	50.0	71	70-135	

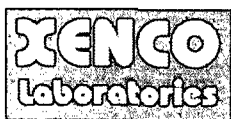
\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 346641,

Project ID: 2009-092

Lab Batch #: 775682

Sample: 346641-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/05/09 14:53

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	76.1	100	76	70-135	
o-Terphenyl	35.1	50.0	70	70-135	

Lab Batch #: 775682

Sample: 346641-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/05/09 15:18

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	74.1	100	74	70-135	
o-Terphenyl	36.1	50.0	72	70-135	

Lab Batch #: 775682

Sample: 346641-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/05/09 15:43

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	75.5	100	76	70-135	
o-Terphenyl	36.0	50.0	72	70-135	

Lab Batch #: 775682

Sample: 346327-006 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/05/09 21:54

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	94.1	100	94	70-135	
o-Terphenyl	36.1	50.0	72	70-135	

Lab Batch #: 775682

Sample: 346327-006 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 10/05/09 22:19

### SURROGATE RECOVERY STUDY

TPH By SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	90.9	100	91	70-135	
o-Terphenyl	36.0	50.0	72	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## BS / BSD Recoveries



Project Name: 14" Vac to Jal - Legacy

Work Order #: 346641

Analyst: ASA

Lab Batch ID: 775555

Sample: 539581-1-BKS

Date Prepared: 10/02/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 10/03/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0966	97	0.1	0.0976	98	1	70-130	35
	Toluene	ND	0.1000	0.0932	93	0.1	0.0947	95	2	70-130	35
	Ethylbenzene	ND	0.1000	0.0937	94	0.1	0.0956	96	2	71-129	35
	m,p-Xylenes	ND	0.2000	0.2039	102	0.2	0.2082	104	2	70-135	35
	o-Xylene	ND	0.1000	0.0993	99	0.1	0.1009	101	2	71-133	35

Analyst: BHW

Lab Batch ID: 775682

Sample: 539683-1-BKS

Date Prepared: 10/04/2009

Batch #: 1

Date Analyzed: 10/05/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
TPH By SW8015 Mod											
Analytes											
C6-C12 Gasoline Range Hydrocarbons	ND	1000	852	85	1000	867	87	2	70-135	35	
C12-C28 Diesel Range Hydrocarbons	ND	1000	823	82	1000	828	83	1	70-135	35	

Relative Percent Difference RPD =  $200 * [(C-F) / (C+E)]$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MSD Recoveries



Project Name: 14" Vac to Jal - Legacy

Work Order #: 346641

Lab Batch ID: 775555

Date Analyzed: 10/03/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 346856-006 S

Batch #: 1 Matrix: Soil

Date Prepared: 10/02/2009

Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY													
Reporting Units: mg/kg	BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Benzene	ND	0.1095	0.0675	62	0.1088	0.0643	59	5	70-130	35	X	
	Toluene	ND	0.1095	0.0702	64	0.1088	0.0651	60	8	70-130	35	X	
	Ethylbenzene	ND	0.1095	0.0685	63	0.1088	0.0646	59	6	71-129	35	X	
	m,p-Xylenes	ND	0.2189	0.1647	75	0.2176	0.1504	69	9	70-135	35	X	
	o-Xylene	ND	0.1095	0.0751	69	0.1088	0.0696	64	8	71-133	35	X	

Lab Batch ID: 775682

Date Analyzed: 10/05/2009

Reporting Units: mg/kg

QC- Sample ID: 346327-006 S

Batch #: 1 Matrix: Soil

Date Prepared: 10/04/2009

Analyst: BHW

Reporting Units: mg/kg											
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY											
TPH By SW8015 Mod  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	ND	1020	914	90	1020	894	88	2	70-135	35	
C12-C28 Diesel Range Hydrocarbons	ND	1020	877	86	1020	855	84	3	70-135	35	

Matrix Spike Percent Recovery:  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference:  $RPD = 200 \times (C-F)/(C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery:  $[G] = 100 \times (F-A)/E$



## Sample Duplicate Recovery



Project Name: 14" Vac to Jal - Legacy

Work Order #: 346641

Lab Batch #: 775229

Project ID: 2009-092

Date Analyzed: 10/02/2009

Date Prepared: 10/02/2009

Analyst: BEV.

QC- Sample ID: 346641-001 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	9.99	9.96	0	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

# Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST  
12600 West 120 East  
Odessa, Texas 79769  
Phone: 432-583-1800  
Fax: 432-583-1713

Project Manager: Curt Stanley

Company Name: Basin Environmental Service Technologies, LLC

Company Address: 2600 Plains Hwy

City/State/Zip: Lovington, NM 83200

Telephone No: (505) 451-2244

Sampler Signature: *[Signature]*

Fax No: (505) 308-1429

e-mail: [csstanley@basinenv.com](mailto:csstanley@basinenv.com)

Project Name: 14" Vac to Jal - Legacy

Project #: 2009-092

Project Loc: Lea County, NM

PO #: PAA - J. Henry

Report Format: ☒ Standard ☐ TRRP ☐ NPDES

ORDER #: 3-10041

LAB # (lab use only)

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Total # of Containers	Field # of Containers	Matrix	Analysis For:
01	West Exc. NSW-1			9/20/2009	1600	1	1	Soil	As Ag Ba Ca Cd Cr Pb Hg Se SAR ESP / QLO Methyl PCBs / PCBs Adverse PCBs / PCBs Cadmium (Ca, Hg, Ni, Pb) TPH: TX 1005 TPH: 4181 (9/15/04) 20158
02	West Exc. WSW-1			9/20/2009	1605	1	1	Soil	
03	West Exc. SSW-1			9/20/2009	1610	1	1	Soil	
04	West Exc. Floor-1			9/20/2009	1615	1	1	Soil	
05	West Exc. Floor-2			9/20/2009	1620	1	1	Soil	

Special Instructions:

Received by: *[Signature]* Date: 10/19/09 Time: 0735

Received by: *[Signature]* Date: 10/19/09 Time: 0735

Received by: *[Signature]* Date: 10/19/09 Time: 0735

Temperature Upon Receipt: 11.1 °C

**Environmental Lab of Texas**  
Variance/ Corrective Action Report- Sample Log-In

Client: Plains / Basin Env  
Date/ Time: 10-01-09 06735  
Lab ID #: 346041  
Initials: JMF

**Sample Receipt Checklist**

			Client Initials	
#1	Temperature of container/ cooler?	<input checked="" type="radio"/> Yes <input type="radio"/> No	1.1	°C
#2	Shipping container in good condition?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Not Present	
#4	Custody Seals intact on sample bottles/ container? <i>Label</i>	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Not Present	
#5	Chain of Custody present?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="radio"/> Yes <input type="radio"/> No	ID written on Cont / Lid	
#9	Container label(s) legible and intact?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#11	Containers supplied by ELOT?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#12	Samples in proper container/ bottle?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#13	Samples properly preserved?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#14	Sample bottles intact?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#15	Preservations documented on Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#16	Containers documented on Chain of Custody?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#18	All samples received within sufficient hold time?	<input checked="" type="radio"/> Yes <input type="radio"/> No	See Below	
#19	Subcontract of sample(s)?	<input checked="" type="radio"/> Yes <input type="radio"/> No	<input checked="" type="radio"/> Not Applicable	
#20	VOC samples have zero headspace?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Not Applicable	

**Variance Documentation**

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# Analytical Report 351779

for

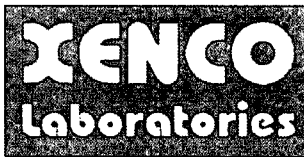
## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14-Inch Vac to Jal Legacy**

**2009-092**

**16-NOV-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Xenco-Boca Raton (EPA Lab Code: FL00449): Florida (E86240),

South Carolina (96031001), Louisiana (04154), Georgia (917)



16-NOV-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **351779**  
**14-Inch Vac to Jal Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 351779. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 351779 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



## Sample Cross Reference 351779



PLAINS ALL AMERICAN EH&S, Midland, TX

14-Inch Vac to Jal Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
GP # 1 @ 6 Ft	S	Nov-10-09 13:00		351779-001
GP # 2 @ Grade	S	Nov-10-09 13:05		351779-002
GP # 3 @ Grade	S	Nov-10-09 13:10		351779-003
GP # 4 @ 5 Ft	S	Nov-10-09 13:15		351779-004
GP # 5 @ 7 Ft	S	Nov-10-09 13:20		351779-005
GP # 6 @ 9 Ft	S	Nov-10-09 13:25		351779-006
GP # 7 @ 9 Ft	S	Nov-10-09 13:30		351779-007
GP # 8 @ 9 Ft	S	Nov-10-09 13:35		351779-008
GP # 9 @ 10 Ft	S	Nov-10-09 13:40		351779-009
GP # 10 @ 7 Ft	S	Nov-10-09 13:45		351779-010
GP # 11 @ 7 Ft	S	Nov-10-09 13:50		351779-011
GP # 12 @ 10 Ft	S	Nov-10-09 13:55		351779-012
GP # 13 @ 10 Ft	S	Nov-10-09 14:00		351779-013
GP # 14 @ 12 Ft	S	Nov-10-09 14:05		351779-014
GP # 15 @ 10 Ft	S	Nov-10-09 14:10		351779-015
GP # 16 @ 10 Ft	S	Nov-10-09 14:15		351779-016





## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal Legacy*

*Project ID: 2009-092*

*Work Order Number: 351779*

*Report Date: 16-NOV-09*

*Date Received: 11/11/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-781290 Inorganic Anions by EPA 300

None

Batch: LBA-781303 TPH by SW8015 Mod

None

Batch: LBA-781403 Percent Moisture

None

Batch: LBA-781406 Percent Moisture

None

Batch: LBA-781411 Inorganic Anions In Soil by E300

None



# Certificate of Analysis Summary 351779

## PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: 14-Inch Vac to Jal Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM



Date Received in Lab: Wed Nov-11-09 08:12 am

Report Date: 16-NOV-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	351779-001	351779-002	351779-003	351779-004	351779-005	351779-006
	Field Id:	GP # 1 @ 6 Ft	GP # 2 @ Grade	GP # 3 @ Grade	GP # 4 @ 5 Ft	GP # 5 @ 7 Ft	GP # 6 @ 9 Ft
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Nov-10-09 13:00	Nov-10-09 13:05	Nov-10-09 13:10	Nov-10-09 13:15	Nov-10-09 13:20	Nov-10-09 13:25
Inorganic Anions In Soil by E300	Extracted:						
	Analyzed:	Nov-11-09 13:33	Nov-11-09 13:33	Nov-11-09 13:33	Nov-11-09 13:33	Nov-11-09 13:33	Nov-12-09 08:42
	Units/RL:	mg/kg RL 119 10.7	mg/kg RL 11.6 10.2	mg/kg RL 3510 51.7	mg/kg RL 772 27.2	mg/kg RL 142 10.4	mg/kg RL ND 5.22
Percent Moisture	Extracted:						
	Analyzed:	Nov-12-09 14:41	Nov-12-09 14:41	Nov-12-09 14:41	Nov-12-09 14:41	Nov-12-09 14:41	Nov-12-09 14:41
	Units/RL:	% RL 6.85 1.00	% RL 1.48 1.00	% RL 3.37 1.00	% RL 8.09 1.00	% RL 4.20 1.00	% RL 4.18 1.00
TPH by SW8015 Mod	Extracted:						
	Analyzed:	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45
	Units/RL:	mg/kg RL ND 16.1	mg/kg RL 31.1 15.2	mg/kg RL ND 15.5	mg/kg RL ND 16.3	mg/kg RL ND 15.7	mg/kg RL 216 15.6
C6-C12 Gasoline Range Hydrocarbons	Extracted:						
	Analyzed:	Nov-11-09 18:43	Nov-11-09 19:10	Nov-11-09 19:37	Nov-11-09 20:03	Nov-11-09 20:30	Nov-11-09 20:57
	Units/RL:	mg/kg RL 31.4 16.1	mg/kg RL 522 15.2	mg/kg RL 263 15.5	mg/kg RL 19.7 16.3	mg/kg RL 62.1 15.7	mg/kg RL 4190 15.6
C12-C28 Diesel Range Hydrocarbons	Extracted:						
	Analyzed:	Nov-11-09 18:43	Nov-11-09 19:10	Nov-11-09 19:37	Nov-11-09 20:03	Nov-11-09 20:30	Nov-11-09 20:57
	Units/RL:	mg/kg RL ND 16.1	mg/kg RL 134 15.2	mg/kg RL 74.8 15.5	mg/kg RL ND 16.3	mg/kg RL ND 15.7	mg/kg RL 290 15.6
C28-C35 Oil Range Hydrocarbons	Extracted:						
	Analyzed:	Nov-11-09 18:43	Nov-11-09 19:10	Nov-11-09 19:37	Nov-11-09 20:03	Nov-11-09 20:30	Nov-11-09 20:57
	Units/RL:	mg/kg RL 31.4 16.1	mg/kg RL 687 15.2	mg/kg RL 338 15.5	mg/kg RL 19.7 16.3	mg/kg RL 62.1 15.7	mg/kg RL 4696 15.6
Total TPH	Extracted:						
	Analyzed:	Nov-11-09 18:43	Nov-11-09 19:10	Nov-11-09 19:37	Nov-11-09 20:03	Nov-11-09 20:30	Nov-11-09 20:57
	Units/RL:	mg/kg RL 31.4 16.1	mg/kg RL 687 15.2	mg/kg RL 338 15.5	mg/kg RL 19.7 16.3	mg/kg RL 62.1 15.7	mg/kg RL 4696 15.6

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Version: 1.0/14

Brent Barron, II  
Odessa Laboratory Manager



# Certificate of Analysis Summary 351779

## PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: 14-Inch Vac to Jal Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM



Date Received in Lab: Wed Nov-11-09 08:12 am

Report Date: 16-NOV-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	351779-007	351779-008	351779-009	351779-010	351779-011	351779-012
	Field Id:	GP # 7 @ 9 Ft	GP # 8 @ 9 Ft	GP # 9 @ 10 Ft	GP # 10 @ 7 Ft	GP # 11 @ 7 Ft	GP # 12 @ 10 Ft
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Nov-10-09 13:30	Nov-10-09 13:35	Nov-10-09 13:40	Nov-10-09 13:45	Nov-10-09 13:50	Nov-10-09 13:55
Inorganic Anions In Soil by E300	Extracted:						
	Analyzed:	Nov-12-09 08:42	Nov-12-09 08:42	Nov-12-09 08:42	Nov-12-09 08:42	Nov-12-09 08:42	Nov-12-09 08:42
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		71.5 5.40	378 27.5	6.72 5.38	16.6 10.6	21.3 5.14	ND 5.17
Percent Moisture	Extracted:						
	Analyzed:	Nov-12-09 14:41	Nov-12-09 14:41	Nov-12-09 14:41	Nov-12-09 14:52	Nov-12-09 14:52	Nov-12-09 14:52
	Units/RL:	% RL	% RL	% RL	% RL	% RL	% RL
Percent Moisture		7.38 1.00	9.23 1.00	7.03 1.00	5.46 1.00	2.80 1.00	3.25 1.00
TPH by SW8015 Mod	Extracted:						
	Analyzed:	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
C6-C12 Gasoline Range Hydrocarbons		ND 16.2	ND 16.5	36.4 16.1	ND 15.9	ND 15.4	688 15.5
C12-C28 Diesel Range Hydrocarbons		40.6 16.2	ND 16.5	286 16.1	23.2 15.9	170 15.4	3670 15.5
C28-C35 Oil Range Hydrocarbons		ND 16.2	ND 16.5	16.2 16.1	ND 15.9	18.6 15.4	227 15.5
Total TPH		40.6 16.2	ND 16.5	339 16.1	23.2 15.9	189 15.4	4585 15.5

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

Version: 1.014

Brent Barron, II  
Odessa Laboratory Manager



# Certificate of Analysis Summary 351779

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea County, NM

Project Name: 14-Inch Vac to Jal Legacy  
Date Received in Lab: Wed Nov-11-09 08:12 am  
Report Date: 16-NOV-09  
Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	351779-013	351779-014	351779-015	351779-016	
	Field Id:	GP # 13 @ 10 Ft	GP # 14 @ 12 Ft	GP # 15 @ 10 Ft	GP # 16 @ 10 Ft	
	Depth:					
	Matrix:	SOIL	SOIL	SOIL	SOIL	
	Sampled:	Nov-10-09 14:00	Nov-10-09 14:05	Nov-10-09 14:10	Nov-10-09 14:15	
Inorganic Anions In Soil by E300	Extracted:					
	Analyzed:	Nov-12-09 08:42	Nov-12-09 08:42	Nov-12-09 08:42	Nov-12-09 08:42	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		219 22.8	9.32 5.21	62.9 5.43	9.57 6.29	
Percent Moisture	Extracted:					
	Analyzed:	Nov-12-09 14:52	Nov-12-09 14:52	Nov-12-09 14:52	Nov-12-09 14:52	
	Units/RL:	% RL	% RL	% RL	% RL	
Percent Moisture		12.1 1.00	3.95 1.00	7.86 1.00	20.5 1.00	
TPH by SW8015 Mod	Extracted:					
	Analyzed:	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	Nov-11-09 12:45	
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
C6-C12 Gasoline Range Hydrocarbons		ND 17.1	212 15.6	ND 16.2	ND 18.8	
C12-C28 Diesel Range Hydrocarbons		51.9 17.1	2920 15.6	69.7 16.2	ND 18.8	
C28-C35 Oil Range Hydrocarbons		ND 17.1	199 15.6	ND 16.2	ND 18.8	
Total TPH		51.9 17.1	3331 15.6	69.7 16.2	ND 18.8	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi  
Version: 1.014

Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd, Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 351779,

Project ID: 2009-092

Lab Batch #: 781303

Sample: 542950-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/11/09 17:26

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	124	99.9	124	70-135	
o-Terphenyl	53.8	50.0	108	70-135	

Lab Batch #: 781303

Sample: 542950-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/11/09 17:52

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	127	99.8	127	70-135	
o-Terphenyl	54.1	49.9	108	70-135	

Lab Batch #: 781303

Sample: 542950-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 11/11/09 18:16

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	92.8	99.8	93	70-135	
o-Terphenyl	58.3	49.9	117	70-135	

Lab Batch #: 781303

Sample: 351779-001 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 18:43

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	88.2	99.9	88	70-135	
o-Terphenyl	55.4	50.0	111	70-135	

Lab Batch #: 781303

Sample: 351779-002 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 19:10

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	76.1	99.9	76	70-135	
o-Terphenyl	45.3	50.0	91	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 351779,

Project ID: 2009-092

Lab Batch #: 781303

Sample: 351779-003 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 19:37

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	86.9	99.7	87	70-135	
o-Terphenyl	53.8	49.9	108	70-135	

Lab Batch #: 781303

Sample: 351779-004 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 20:03

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	87.1	100	87	70-135	
o-Terphenyl	55.1	50.0	110	70-135	

Lab Batch #: 781303

Sample: 351779-005 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 20:30

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	84.5	100	85	70-135	
o-Terphenyl	52.0	50.0	104	70-135	

Lab Batch #: 781303

Sample: 351779-006 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 20:57

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	86.7	99.8	87	70-135	
o-Terphenyl	54.7	49.9	110	70-135	

Lab Batch #: 781303

Sample: 351779-007 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 21:25

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	87.2	100	87	70-135	
o-Terphenyl	54.8	50.0	110	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 351779,

Project ID: 2009-092

Lab Batch #: 781303

Sample: 351779-008 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 21:52

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	81.7	99.8	82	70-135	
o-Terphenyl	51.1	49.9	102	70-135	

Lab Batch #: 781303

Sample: 351779-009 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 22:19

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	94.4	100	94	70-135	
o-Terphenyl	60.3	50.0	121	70-135	

Lab Batch #: 781303

Sample: 351779-010 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 22:47

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	76.0	100	76	70-135	
o-Terphenyl	47.1	50.0	94	70-135	

Lab Batch #: 781303

Sample: 351779-011 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/11/09 23:41

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	70.8	99.6	71	70-135	
o-Terphenyl	43.9	49.8	88	70-135	

Lab Batch #: 781303

Sample: 351779-012 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/12/09 00:08

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	103	100	103	70-135	
o-Terphenyl	50.3	50.0	101	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 351779,

Project ID: 2009-092

Lab Batch #: 781303

Sample: 351779-013 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/12/09 00:36

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	85.0	100	85	70-135	
o-Terphenyl	53.3	50.0	107	70-135	

Lab Batch #: 781303

Sample: 351779-014 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/12/09 01:03

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	95.4	100	95	70-135	
o-Terphenyl	59.0	50.0	118	70-135	

Lab Batch #: 781303

Sample: 351779-015 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/12/09 01:29

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	88.4	99.7	89	70-135	
o-Terphenyl	55.4	49.9	111	70-135	

Lab Batch #: 781303

Sample: 351779-016 / SMP

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/12/09 01:55

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	89.9	99.5	90	70-135	
o-Terphenyl	57.0	49.8	114	70-135	

Lab Batch #: 781303

Sample: 351779-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 11/12/09 04:07

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1-Chlorooctane	121	100	121	70-135	
o-Terphenyl	54.7	50.0	109	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal Legacy

Work Orders : 351779,

Lab Batch #: 781303

Sample: 351779-001 SD / MSD

Batch: 1

Project ID: 2009-092

Matrix: Soil

Units: mg/kg

Date Analyzed: 11/12/09 04:33

### SURROGATE RECOVERY STUDY

TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	128	100	128	70-135	
o-Terphenyl	53.5	50.0	107	70-135	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



# Blank Spike Recovery



Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 351779

Project ID:

2009-092

Lab Batch #: 781290

Sample: 781290-1-BKS

Matrix: Solid

Date Analyzed: 11/11/2009

Date Prepared: 11/11/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Inorganic Anions In Soil by E300	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Chloride	ND	10.0	10.6	106	75-125	

Lab Batch #: 781411

Sample: 781411-1-BKS

Matrix: Solid

Date Analyzed: 11/12/2009

Date Prepared: 11/12/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Inorganic Anions In Soil by E300	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Chloride	ND	10.0	10.4	104	75-125	

Blank Spike Recovery [D] =  $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

ND - Below Reporting Limit



# BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 351779

Analyst: BEV

Lab Batch ID: 781303

Sample: 542950-1-BKS

Date Prepared: 11/11/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 11/11/2009

Matrix: Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TPH by SW8015 Mod		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
C6-C12 Gasoline Range Hydrocarbons		ND	999	892	89	998	895	90	0	70-135	35	
C12-C28 Diesel Range Hydrocarbons		ND	999	808	81	998	835	84	3	70-135	35	

Relative Percent Difference RPD =  $200 * (C-F) / (C+F)$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes



## Form 3 - MS Recoveries

Project Name: 14-Inch Vac to Jal Legacy



Work Order #: 351779

Lab Batch #: 781290

Date Analyzed: 11/11/2009

Date Prepared: 11/11/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 351720-001 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

### MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	2120	1300	3700	122	75-125	

Lab Batch #: 781411

Date Analyzed: 11/12/2009

Date Prepared: 11/12/2009

Analyst: LATCOR

QC- Sample ID: 351779-006 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

### MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	ND	115	120	104	75-125	

Matrix Spike Percent Recovery [D] =  $100 \cdot (C-A)/B$   
Relative Percent Difference [E] =  $200 \cdot (C-A)/(C+B)$   
All Results are based on MDL and Validated for QC Purposes

- Below Reporting Limit



# Form 3 - MSD Recoveries



Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 351779

Lab Batch ID: 781303

Date Analyzed: 11/12/2009

Reporting Units: mg/kg

Project ID: 2009-092

QC- Sample ID: 351779-001 S

Date Prepared: 11/11/2009

Batch #: 1 Matrix: Soil

Analyst: BEV

Reporting Units: mg/kg		MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
TPH by SW8015 Mod  Analytes												
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	C6-C12 Gasoline Range Hydrocarbons	ND	1070	934	87	1070	951	89	2	70-135	35	
	C12-C28 Diesel Range Hydrocarbons	31.4	1070	837	75	1070	864	78	4	70-135	35	

Matrix Spike Percent Recovery  $[D] = 100 * (C-A) / B$

Relative Percent Difference  $RPD = 200 * (C-F) / (C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not

Applicable N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F-A) / E$



## Sample Duplicate Recovery



Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 351779

Lab Batch #: 781290

Date Analyzed: 11/11/2009

Date Prepared: 11/11/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 351720-001 D

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Inorganic Anions In Soil by E300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	2120	2110	0	20	

Lab Batch #: 781411

Date Analyzed: 11/12/2009

Date Prepared: 11/12/2009

Analyst: LATCOR

QC- Sample ID: 351779-006 D

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Inorganic Anions In Soil by E300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	ND	ND	NC	20	

Lab Batch #: 781403

Date Analyzed: 11/12/2009

Date Prepared: 11/12/2009

Analyst: BEV

QC- Sample ID: 351716-016 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	9.47	8.39	12	20	

Lab Batch #: 781406

Date Analyzed: 11/12/2009

Date Prepared: 11/12/2009

Analyst: BEV

QC- Sample ID: 351779-010 D

Batch #: 1

Matrix: Soil

Reporting Units: %

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	5.46	5.87	7	20	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$   
All Results are based on MDL and validated for QC purposes.  
BRL - Below Reporting Limit

**Project Manager:** Curt Stanley

Company Name

**Basin Environmental Service Technologies, LLC**

**Company Address: 2800 Plains Hwy**

**Project Loc: Lea County, NM**

City/State/Zip: Lovington, NM 88260

PO #: PAA - J. Henry

Telephone No: (575) 441-2244-

Fax No: (575) 398-1429

**Sampler Signature:**

e-mail: [cdstanley@basin-consulting.com](mailto:cdstanley@basin-consulting.com)

(lab use only)

351779

 $(A_1)$ [illegible]

**Special Instructions:**

Relinquished by:

Relinquished by:

**Relinquished by:**

Patq	Time
------	------

Date	Time
11/11/14	10:00

Date	Time
------	------

**Received by:**

**Received by:**

**Received by ELQ:**

Received by ELOT: OpwAvalar

Laboratory Comments:

## Sample Containers Intact?

## VOCs Free of Headspace?

Labels on container(s)

**Custody seals on container(s)**

**Custody seals on cooler(s)**

Sample Hand Delivered

by Sampler/Column Rep. 7  
by Counter? 11PS 11H

11/11/2011

**Temperature Upon Receipt:**

\_\_\_\_\_

10

\_\_\_\_\_



Project Manager: Curt Stanley

**Project Name: 14-Inch Vac to Jail Legacy**

Company Name	Basin Environmental Service Technologies, LLC
--------------	---

**Project #: 2009-092**

**Company Address: 2800 Plains Hwy**

**Project Loc:** Lea County, NM

City/State/Zip: Lovington, NM 88260

PO #: PAA - J. Henry

Telephone No: (575) 441-2244


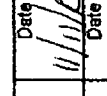
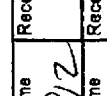
Fax No: (575) 396-1429

**Sampler Signature:**

**cdstanlev@basin-consulting.com**

```
{lab use only}
```

351779

LAB # (lab use only)		FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Total # of Containers	Field Filtered	Preservation & # of Containers										Matrix	Analyze For:												
									HNO <sub>3</sub>	HCl (VOA X 2)	H <sub>2</sub> SO <sub>4</sub>	NaOH	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	None (PAH)	Other (Specify)	DW=Drinking Water SL=Sludge GW=Groundwater S=Soil/Solid NP=Non-Potable Specify Other	TPH: 418.1 6015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO <sub>4</sub> , Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	SemiVolatiles	BTEX 8021B/6030 or BTEX 8260	RCI	NORM	PAH	EPA Paint Filter Test	Chloride E 300	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
11		GP #11 @ 7 ft			11/10/2009	1350	1		X								Soil	X												X		X
12		GP #12 @ 10 ft			11/10/2009	1355	1		X								Soil	X												X		X
13		GP #13 @ 10 ft			11/10/2009	1400	1		X								Soil	X												X		X
14		GP #14 @ 12 ft			11/10/2009	1405	1		X								Soil	X												X		X
15		GP #15 @ 10 ft			11/10/2009	1410	1		X								Soil	X												X		X
16		GP #16 @ 10 ft			11/10/2009	1015	1		X								Soil	X												X		X
Special Instructions:																																
Laboratory Comments: 429C Sample Containers Intact? <input checked="" type="checkbox"/> VOCs Free of Headspace? <input checked="" type="checkbox"/> Labels on container(s) <input checked="" type="checkbox"/> Custody seals on container(s) <input checked="" type="checkbox"/> Custody seals on cooler(s) <input checked="" type="checkbox"/> Sample Hand Delivered by Sample Client Rep? <input checked="" type="checkbox"/> by Courier? <input checked="" type="checkbox"/> UPS <input checked="" type="checkbox"/> DHL <input checked="" type="checkbox"/> FedEx <input checked="" type="checkbox"/> Lone Star <input checked="" type="checkbox"/> Temperature Upon Receipt: -4 °C																																
Relinquished by:  Date: 11/11/09 Time: 0812 Relinquished by:  Date: 11/11/09 Time: 0812 Relinquished by:  Date: 11/11/09 Time: 0812																																

# Environmental Lab of Texas

## Variance/ Corrective Action Report- Sample Log-In

Client: Basin / Plains

Date/ Time: 11/11/09 8:12

Lab ID #: 351779

Initials: gmu

### Sample Receipt Checklist

				Client Initials
#1	Temperature of container/ cooler?	<u>Yes</u>	No	<u>-4</u> °C
#2	Shipping container in good condition?	<u>Yes</u>	No	
#3	Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	<u>Not Present</u>
#4	Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>Not Present</u>
#5	Chain of Custody present?	<u>Yes</u>	No	
#6	Sample instructions complete of Chain of Custody?	<u>Yes</u>	No	
#7	Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No	
#8	Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No	ID written on Cont./ Lid
#9	Container label(s) legible and intact?	<u>Yes</u>	No	Not Applicable
#10	Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No	
#11	Containers supplied by ELOT?	<u>Yes</u>	No	
#12	Samples in proper container/ bottle?	<u>Yes</u>	No	See Below
#13	Samples properly preserved?	<u>Yes</u>	No	See Below
#14	Sample bottles intact?	<u>Yes</u>	No	
#15	Preservations documented on Chain of Custody?	<u>Yes</u>	No	
#16	Containers documented on Chain of Custody?	<u>Yes</u>	No	
#17	Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No	See Below
#18	All samples received within sufficient hold time?	<u>Yes</u>	No	See Below
#19	Subcontract of sample(s)?	<u>Yes</u>	No	<u>Not Applicable</u>
#20	VOC samples have zero headspace?	<u>Yes</u>	No	<u>Not Applicable</u>

### Variance Documentation

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

Check all that Apply:

- ☐ See attached e-mail/ fax  
☐ Client understands and would like to proceed with analysis  
☐ Cooling process had begun shortly after sampling event

# **Analytical Report 355590**

**for**

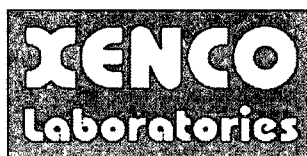
## **PLAINS ALL AMERICAN EH&S**

**Project Manager: Jason Henry**

**14-Inch Vac to Jal Legacy**

**2009-092**

**17-DEC-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Xenco-Boca Raton (EPA Lab Code: FL00449): Florida (E86240),

South Carolina (96031001), Louisiana (04154), Georgia (917)



17-DEC-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **355590**  
**14-Inch Vac to Jal Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 355590. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 355590 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



## Sample Cross Reference 355590



PLAINS ALL AMERICAN EH&S, Midland, TX

14-Inch Vac to Jal Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB # 4 @ 10'	S	Dec-10-09 09:15		355590-001
SB # 4 @ 20'	S	Dec-10-09 09:40		355590-002
SB # 4 @ 30'	S	Dec-10-09 10:25		355590-003
SB # 4 @ 40'	S	Dec-10-09 11:00		355590-004
SB # 4 @ 50'	S	Dec-10-09 11:55		355590-005
SB # 5 @ 10'	S	Dec-10-09 13:10		355590-006
SB # 5 @ 20'	S	Dec-10-09 13:40		355590-007
SB # 5 @ 30'	S	Dec-10-09 14:15		355590-008
SB # 5 @ 40'	S	Dec-10-09 15:00		355590-009
SB # 5 @ 45'	S	Dec-10-09 15:50		355590-010



## CASE NARRATIVE

**Client Name:** PLAINS ALL AMERICAN EH&S

**Project Name:** 14-Inch Vac to Jal Legacy

**Project ID:** 2009-092

**Work Order Number:** 355590

**Report Date:** 17-DEC-09

**Date Received:** 12/14/2009

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

**Batch:** LBA-785868 Inorganic Anions by EPA 300

None

**Batch:** LBA-785882 Percent Moisture

None

**Batch:** LBA-785886 Percent Moisture

None

**Batch:** LBA-785951 Inorganic Anions In Soil by E300

None



# Certificate of Analysis Summary 355590

## PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: 14-Inch Vac to Jal Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Mon Dec-14-09 05:20 pm


Report Date: 17-DEC-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	355590-001	355590-002	355590-003	355590-004	355590-005	355590-006
	Field Id:	SB # 4 @ 10'	SB # 4 @ 20'	SB # 4 @ 30'	SB # 4 @ 40'	SB # 4 @ 50'	SB # 5 @ 10'
	Depth:						
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Sampled:	Dec-10-09 09:15	Dec-10-09 09:40	Dec-10-09 10:25	Dec-10-09 11:00	Dec-10-09 11:55	Dec-10-09 13:10
Inorganic Anions In Soil by E300	Extracted:						
	Analyzed:	Dec-15-09 14:06	Dec-15-09 14:06	Dec-15-09 14:06	Dec-15-09 14:06	Dec-15-09 14:06	Dec-15-09 14:06
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		85.3 5.77	26.8 5.55	61.8 5.38	26.5 5.17	ND 5.02	117 5.64
Percent Moisture	Extracted:						
	Analyzed:	Dec-15-09 17:00	Dec-15-09 17:00	Dec-15-09 17:00	Dec-15-09 17:00	Dec-15-09 17:00	Dec-15-09 17:00
	Units/RL:	% RL	% RL	% RL	% RL	% RL	% RL
Percent Moisture		13.4 1.00	9.89 1.00	7.01 1.00	3.27 1.00	12.1 1.00	11.3 1.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron, II  
Odessa Laboratory Manager



# Certificate of Analysis Summary 355590

## PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: 14-Inch Vac to Jal Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Mon Dec-14-09 05:20 pm

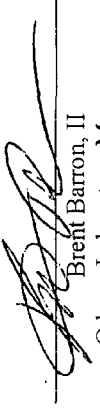
Report Date: 17-DEC-09

Project Manager: Brent Barron, II

Analysis Requested	Lab Id:	355590-007	355590-008	355590-009	355590-010
	Field Id:	SB # 5 @ 20'	SB # 5 @ 30'	SB # 5 @ 40'	SB # 5 @ 45'
	Depth:				
	Matrix:	SOIL	SOIL	SOIL	SOIL
	Sampled:	Dec-10-09 13:40	Dec-10-09 14:15	Dec-10-09 15:00	Dec-10-09 15:50
Inorganic Anions In Soil by E300	Extracted:				
	Analyzed:	Dec-16-09 08:38	Dec-16-09 08:38	Dec-16-09 08:38	Dec-16-09 08:38
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		263 11.2	55.5 5.23	6.71 5.04	183 10.4
Percent Moisture	Extracted:				
	Analyzed:	Dec-15-09 17:00	Dec-15-09 17:00	Dec-15-09 17:00	Dec-15-09 17:00
	Units/RL:	% RL	% RL	% RL	% RL
Percent Moisture		10.5 1.00	4.41 1.00	ND 1.00	3.44 1.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron, II  
Odessa Laboratory Manager





## Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

***Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.***

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd, Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



# Blank Spike Recovery



Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 355590

Project ID:

2009-092

Lab Batch #: 785868

Sample: 785868-1-BKS

Matrix: Solid

Date Analyzed: 12/15/2009

Date Prepared: 12/15/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Inorganic Anions In Soil by E300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	10.8	108	75-125	

Lab Batch #: 785951

Sample: 785951-1-BKS

Matrix: Solid

Date Analyzed: 12/16/2009

Date Prepared: 12/16/2009

Analyst: LATCOR

Reporting Units: mg/kg

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Inorganic Anions In Soil by E300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	10.6	106	75-125	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

QL - Below Reporting Limit



## Form 3 - MS Recoveries

Project Name: 14-Inch Vac to Jal Legacy



Work Order #: 355590

Lab Batch #: 785868

Date Analyzed: 12/15/2009

Date Prepared: 12/15/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 355585-001 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	255	1260	1640	110	75-125	

Lab Batch #: 785951

Date Analyzed: 12/16/2009

Date Prepared: 12/16/2009

Analyst: LATCOR

QC- Sample ID: 355590-008 S

Batch #: 1

Matrix: Soil

Reporting Units: mg/kg

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	55.5	112	172	104	75-125	

Matrix Spike Percent Recovery [D] =  $100 \cdot (C-A)/B$

Relative Percent Difference [E] =  $200 \cdot (C-A)/(C+B)$

All Results are based on MDL and Validated for QC Purposes

- Below Reporting Limit



## Sample Duplicate Recovery

Project Name: 14-Inch Vac to Jal Legacy

Work Order #: 355590

Lab Batch #: 785868

Date Analyzed: 12/15/2009

QC- Sample ID: 355585-001 D

Reporting Units: mg/kg

Date Prepared: 12/15/2009

Batch #: 1

Project ID: 2009-092

Analyst: LATCOR

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Inorganic Anions In Soil by E300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	255	241	6	20	

Lab Batch #: 785951

Date Analyzed: 12/16/2009

QC- Sample ID: 355590-008 D

Reporting Units: mg/kg

Date Prepared: 12/16/2009

Batch #: 1

Analyst: LATCOR

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Inorganic Anions In Soil by E300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	55.5	56.7	2	20	

Lab Batch #: 785882

Date Analyzed: 12/15/2009

QC- Sample ID: 355585-001 D

Reporting Units: %

Date Prepared: 12/15/2009

Batch #: 1

Analyst: WRU

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	20.9	22.4	7	20	

Lab Batch #: 785886

Date Analyzed: 12/15/2009

QC- Sample ID: 355590-007 D

Reporting Units: %

Date Prepared: 12/15/2009

Batch #: 1

Analyst: WRU

Matrix: Soil

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Percent Moisture	10.5	11.4	9	20	

Spike Relative Difference  $RPD = 200 * |(B-A)/(B+A)|$   
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



# Environmental Lab of Texas

## Variance/ Corrective Action Report- Sample Log-In

Client: Plains / Basin  
 Date/ Time: 12-14-09 @ 1720  
 Lab ID #: 355590  
 Initials: JMF

### Sample Receipt Checklist

Client Initials

#1 Temperature of container/ cooler?	<u>(Yes)</u>	No	2.6 °C	
#2 Shipping container in good condition?	<u>(Yes)</u>	No		
#3 Custody Seals intact on shipping container/ cooler?	Yes	No	<u>(Not Present)</u>	
#4 Custody Seals intact on sample bottles/ container? /labels	<u>(Yes)</u>	No	Not Present	
#5 Chain of Custody present?	<u>(Yes)</u>	No		
#6 Sample instructions complete of Chain of Custody?	<u>(Yes)</u>	No		
#7 Chain of Custody signed when relinquished/ received?	<u>(Yes)</u>	No		
#8 Chain of Custody agrees with sample label(s)?	<u>(Yes)</u>	No	ID written on Cont./ Lid	
#9 Container label(s) legible and intact?	<u>(Yes)</u>	No	Not Applicable	
#10 Sample matrix/ properties agree with Chain of Custody?	<u>(Yes)</u>	No		
#11 Containers supplied by ELOT?	<u>(Yes)</u>	No		
#12 Samples in proper container/ bottle?	<u>(Yes)</u>	No	See Below	
#13 Samples properly preserved?	<u>(Yes)</u>	No	See Below	
#14 Sample bottles intact?	<u>(Yes)</u>	No		
#15 Preservations documented on Chain of Custody?	<u>(Yes)</u>	No		
#16 Containers documented on Chain of Custody?	<u>(Yes)</u>	No		
#17 Sufficient sample amount for indicated test(s)?	<u>(Yes)</u>	No	See Below	
#18 All samples received within sufficient hold time?	<u>(Yes)</u>	No	See Below	
#19 Subcontract of sample(s)?	Yes	<u>(No)</u>	Not Applicable	
#20 VOC samples have zero headspace?	<u>(Yes)</u>	No	Not Applicable	

### Variance Documentation

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken:

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# Analytical Report 337179

for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14" Vac to Jal Legacy**

**2009-092**

**14-JUL-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AAL11), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Miramar (EPA Lab code: FL01246): Florida (E86349)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Houston - Dallas - San Antonio - Tampa - Miami - Midland - Corpus Christi - Atlanta - Latin America



14-JUL-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **337179**  
**14" Vac to Jal Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 337179. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 337179 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America





## Sample Cross Reference 337179



PLAINS ALL AMERICAN EH&S, Midland, TX

14" Vac to Jal Legacy

### Sample Id

SB-2 Prelim GW

SB-3 Prelim GW

### Matrix

W

W

### Date Collected

Jul-02-09 07:30

Jul-02-09 13:00

### Sample Depth

### Lab Sample Id

337179-001

337179-002



## CASE NARRATIVE

**Client Name:** PLAINS ALL AMERICAN EH&S

**Project Name:** 14" Vac to Jal Legacy

**Project ID:** 2009-092

**Work Order Number:** 337179

**Report Date:** 14-JUL-09

**Date Received:** 07/06/2009

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

**Batch:** LBA-764628 Inorganic Anions by EPA 300

None

**Batch:** LBA-764871 TDS by SM2540C

None

**Batch:** LBA-765343 BTEX-MTBE EPA 8021B

SW8021BM

Batch 765343, 4-Bromofluorobenzene recovered below QC limits Data not confirmed by re-analysis. Samples affected are: 533575-1-BLK, 337179-002.

1,4-Difluorobenzene recovered above QC limits. Matrix interferences is suspected; data not confirmed by re-analysis

Samples affected are: 336977-006 S, 336977-006 SD.

SW8021BM

Batch 765343, Toluene, o-Xylene recovered below QC limits in the Matrix Spike.

Samples affected are: 337179-002, -001.

The Laboratory Control Sample for Toluene, o-Xylene is within laboratory Control Limits



# Certificate of Analysis Summary 337179

## PLAINS ALL AMERICAN EH&S, Midland, TX



Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Project Name: 14" Vac to Jal Legacy

Date Received in Lab: Mon Jul-06-09 12:35 pm


Report Date: 14-JUL-09

Project Manager: Brent Barron, II

Analysis Requested		Lab Id:	337179-001		337179-002					
		Field Id:	SB-2 Prelim GW		SB-3 Prelim GW					
		Depth:	WATER		WATER					
		Matrix:	Jul-02-09 07:30		Jul-02-09 13:00					
		Sampled:								
Anions by EPA 300		Extracted:	Jul-06-09 14:02		Jul-06-09 14:02					
		Analyzed:	mg/L RL		mg/L RL					
		Units/RL:	10200 500		10500 500					
		Chloride	Extracted:	Jul-11-09 11:00		Jul-11-09 11:00				
			Analyzed:	Jul-13-09 14:25		Jul-13-09 14:43				
Units/RL:	mg/L RL		mg/L RL							
BTEX by EPA 8021B	Extracted:		0.0063 0.0010		ND 0.0010					
	Analyzed:		0.0158 0.0020		ND 0.0020					
	Units/RL:	0.0054 0.0010		ND 0.0010						
	Benzene	Extracted:	0.0070 0.0020		ND 0.0020					
		Analyzed:	0.0037 0.0010		ND 0.0010					
Units/RL:		0.0107 0.0010		ND 0.0010						
Toluene		Extracted:	0.0382 0.0010		ND 0.0010					
		Analyzed:								
	Units/RL:									
	Ethylbenzene	Extracted:	Jul-07-09 15:22		Jul-07-09 15:22					
		Analyzed:	mg/L RL		mg/L RL					
Units/RL:		19700 5.00		20500 5.00						
m,p-Xylenes		Extracted:								
		Analyzed:								
	Units/RL:									
	o-Xylene	Extracted:								
		Analyzed:								
Units/RL:										
Total Xylenes		Extracted:								
		Analyzed:								
	Units/RL:									
	Total BTEX	Extracted:								
		Analyzed:								
Units/RL:										
TDS by SM2540C		Extracted:								
		Analyzed:								
	Units/RL:									
	Total dissolved solids	Extracted:								
		Analyzed:								
Units/RL:										

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

**BRL** Below Reporting Limit.

**RL** Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
 9701 Harry Hines Blvd , Dallas, TX 75220  
 5332 Blackberry Drive, San Antonio TX 78238  
 2505 North Falkenburg Rd, Tampa, FL 33619  
 5757 NW 158th St, Miami Lakes, FL 33014  
 12600 West I-20 East, Odessa, TX 79765  
 842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 337179,

Project ID: 2009-092

Lab Batch #: 765343

Sample: 533575-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/13/09 12:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0351	0.0300	117	80-120	

Lab Batch #: 765343

Sample: 533575-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/13/09 12:53

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0315	0.0300	105	80-120	
4-Bromofluorobenzene	0.0356	0.0300	119	80-120	

Lab Batch #: 765343

Sample: 533575-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/13/09 13:30

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0192	0.0300	64	80-120	*

Lab Batch #: 765343

Sample: 337179-001 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/13/09 14:25

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0267	0.0300	89	80-120	
4-Bromofluorobenzene	0.0273	0.0300	91	80-120	

Lab Batch #: 765343

Sample: 337179-002 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/13/09 14:43

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0275	0.0300	92	80-120	
4-Bromofluorobenzene	0.0229	0.0300	76	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal Legacy

Work Orders : 337179,

Lab Batch #: 765343

Sample: 336977-006 S / MS

Project ID: 2009-092

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/13/09 20:36

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0472	0.0300	157	80-120	*
4-Bromofluorobenzene	0.0309	0.0300	103	80-120	

Lab Batch #: 765343

Sample: 336977-006 SD / MSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/13/09 20:55

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0485	0.0300	162	80-120	*
4-Bromofluorobenzene	0.0331	0.0300	110	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Blank Spike Recovery



Project Name: 14" Vac to Jal Legacy

Work Order #: 337179

Project ID:

2009-092

Lab Batch #: 764628

Sample: 764628-1-BKS

Matrix: Water

Date Analyzed: 07/06/2009

Date Prepared: 07/06/2009

Analyst: LATCOR

Reporting Units: mg/L

Batch #: 1

### BLANK /BLANK SPIKE RECOVERY STUDY

Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	9.22	92	90-110	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

L - Below Reporting Limit



# BS / BSD Recoveries



Project Name: 14" Vac to Jal Legacy

Work Order #: 337179

Analyst: ASA

Lab Batch ID: 765343

Sample: 533575-1-BKS

Date Prepared: 07/11/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 07/13/2009

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
BTEX by EPA 8021B  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0845	85	0.1	0.0908	91	7	70-125	25
	Toluene	ND	0.1000	0.0799	80	0.1	0.0861	86	7	70-125	25
	Ethylbenzene	ND	0.1000	0.0890	89	0.1	0.0961	96	8	71-129	25
	m,p-Xylenes	ND	0.2000	0.1780	89	0.2	0.1937	97	8	70-131	25
	o-Xylene	ND	0.1000	0.0847	85	0.1	0.0914	91	8	71-133	25

Analyst: WRU

Lab Batch ID: 764871

Sample: 764871-1-BKS

Date Prepared: 07/07/2009

Batch #: 1

Date Analyzed: 07/07/2009

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TDS by SM2540C		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
Total dissolved solids		ND	1000	904	90	1000	942	94	4	80-120	30	

Relative Percent Difference RPD =  $200 * (C - F) / (C + F)$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes





## Form 3 - MS Recoveries

Project Name: 14" Vac to Jal Legacy



Work Order #: 337179

Lab Batch #: 764628

Date Analyzed: 07/06/2009

Date Prepared: 07/06/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 337000-001 S

Batch #: 1

Matrix: Water

Reporting Units: mg/L

### MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	495	250	739	98	80-120	

Matrix Spike Percent Recovery [D] =  $100 \times (C-A)/B$

Relative Percent Difference [E] =  $200 \times (C-A)/(C+B)$

All Results are based on MDL and Validated for QC Purposes

- Below Reporting Limit



# Form 3 - MSD Recoveries



Project Name: 14" Vac to Jal Legacy

Work Order #: 337179

Lab Batch ID: 765343

Date Analyzed: 07/13/2009

Reporting Units: mg/L

Project ID: 2009-092

QC- Sample ID: 336977-006 S

Batch #: 1 Matrix: Water

Date Prepared: 07/11/2009

Analyst: ASA

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY													
Reporting Units: mg/L	BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
		Benzene	0.0286	0.1000	0.1043	76	0.1000	0.1067	78	2	70-125	25	
		Toluene	ND	0.1000	0.0679	68	0.1000	0.0698	70	3	70-125	25	X
		Ethylbenzene	0.0030	0.1000	0.0759	73	0.1000	0.0791	76	4	71-129	25	
		m,p-Xylenes	ND	0.2000	0.1494	75	0.2000	0.1540	77	3	70-131	25	
		o-Xylene	ND	0.1000	0.0704	70	0.1000	0.0728	73	3	71-133	25	X

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times (C-F)/(C+F)$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$



## Sample Duplicate Recovery



Project Name: 14" Vac to Jal Legacy

Work Order #: 337179

Lab Batch #: 764628

Date Analyzed: 07/06/2009

QC- Sample ID: 337000-001 D

Reporting Units: mg/L

Date Prepared: 07/06/2009

Batch #: 1

Project ID: 2009-092

Analyst: LATCOR

Matrix: Water

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	495	487	2	20	

Lab Batch #: 764871

Date Analyzed: 07/07/2009

QC- Sample ID: 337179-001 D

Reporting Units: mg/L

Date Prepared: 07/07/2009

Batch #: 1

Analyst: WRU

Matrix: Water

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total dissolved solids	19700	19800	1	30	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

**CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST**  
**12600 West 120 East**  
**Odessa, Texas 79765**  
**Phone: 432-563-1800**  
**Fax: 432-563-7713**

Project Name: 14" Vac to Jal Legacy

Project #: 2009-092

Project Loc: Lea County, NM

PO#: PAA - Jason Henry

Fax No: (575) 398-1429

e-mail: [cibryant@basin-consulting.com](mailto:cibryant@basin-consulting.com)

ORDER # 337179

[illegible]

# Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Basin Env./Plains  
 Date/ Time: 7-10-09 12:35  
 Lab ID #: 337179  
 Initials: AL

## Sample Receipt Checklist

Client Initials

#1 Temperature of container/ cooler?	<input checked="" type="checkbox"/> Yes	No	4.1 °C	
#2 Shipping container in good condition?	<input checked="" type="checkbox"/> Yes	No		
#3 Custody Seals intact on shipping container/ cooler?	<input checked="" type="checkbox"/> Yes	No	Not Present	
#4 Custody Seals intact on sample bottles/ container?	<input checked="" type="checkbox"/> Yes	No	Not Present	
#5 Chain of Custody present?	<input checked="" type="checkbox"/> Yes	No		
#6 Sample instructions complete of Chain of Custody?	<input checked="" type="checkbox"/> Yes	No		
#7 Chain of Custody signed when relinquished/ received?	<input checked="" type="checkbox"/> Yes	No		
#8 Chain of Custody agrees with sample label(s)?	<input checked="" type="checkbox"/> Yes	No	ID written on Cont./ Lid	
#9 Container label(s) legible and intact?	<input checked="" type="checkbox"/> Yes	No	Not Applicable	
#10 Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="checkbox"/> Yes	No		
#11 Containers supplied by ELOT?	<input checked="" type="checkbox"/> Yes	No		
#12 Samples in proper container/ bottle?	<input checked="" type="checkbox"/> Yes	No	See Below	
#13 Samples properly preserved?	<input checked="" type="checkbox"/> Yes	No	See Below	
#14 Sample bottles intact?	<input checked="" type="checkbox"/> Yes	No		
#15 Preservations documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	No		
#16 Containers documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	No		
#17 Sufficient sample amount for indicated test(s)?	<input checked="" type="checkbox"/> Yes	No	See Below	
#18 All samples received within sufficient hold time?	<input checked="" type="checkbox"/> Yes	No	See Below	
#19 Subcontract of sample(s)?	<input checked="" type="checkbox"/> Yes	No	Not Applicable	
#20 VOC samples have zero headspace?	<input checked="" type="checkbox"/> Yes	No	Not Applicable	

## Variance Documentation

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# Analytical Report 337272

for

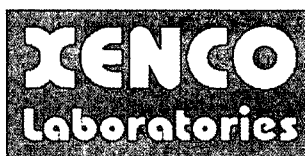
## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14" Vac to Jal - Legacy**

**2009-092**

**14-JUL-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Miramar (EPA Lab code: FL01246): Florida (E86349)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Houston - Dallas - San Antonio - Tampa - Miami - Midland - Corpus Christi - Atlanta - Latin America



14-JUL-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **337272**  
**14" Vac to Jal - Legacy**  
Project Address: Lea Co., NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 337272. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 337272 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



# Sample Cross Reference 337272



PLAINS ALL AMERICAN EH&S, Midland, TX

14" Vac to Jal - Legacy

**Sample Id**

**Matrix**

**Date Collected**

**Sample Depth**

**Lab Sample Id**

MW-1

W

Jul-06-09 10:45

337272-001





## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14" Vac to Jal - Legacy*

*Project ID: 2009-092*

*Work Order Number: 337272*

*Report Date: 14-JUL-09*

*Date Received: 07/07/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-764860 Inorganic Anions by EPA 300

None

Batch: LBA-764871 TDS by SM2540C

None

Batch: LBA-765196 BTEX-MTBE EPA 8021B  
SW8021BM

Batch 765196, Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate.

Samples affected are: 337272-001.

The Laboratory Control Sample for Toluene, m,p-Xylenes, Benzene, Ethylbenzene, o-Xylene is within laboratory Control Limits

SW8021BM

Batch 765196, 1,4-Difluorobenzene recovered below QC limits. Matrix interferences is suspected; data not confirmed by re-analysis

Samples affected are: 337033-002 S, 337033-002 SD.

4-Bromofluorobenzene recovered below QC limits Data not confirmed by re-analysis. Samples affected are: 533485-1-BLK, 337033-002 S, 337033-002 SD, 337272-001.

4-Bromofluorobenzene recovered above QC limits Data not confirmed by re-analysis. Samples affected are: 533485-1-BKS, 533485-1-BSD.



**Certificate of Analysis Summary 337272**  
**PLAINS ALL AMERICAN EH&S, Midland, TX**  
**Project Name: 14" Vac to Jal - Legacy**




Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea Co., NM

Date Received in Lab: Tue Jul-07-09 10:15 am  
Report Date: 14-JUL-09  
Project Manager: Brent Barron, II

<i>Analysis Requested</i>		Lab Id: Field Id: Depth: Matrix: Sampled:	337272-001 MW-1 WATER Jul-06-09 10:45				
Anions by EPA 300	Extracted:						
	Analyzed:		Jul-08-09 17:29				
	Units/RL:		mg/L RL				
Chloride			5300 250				
BTEX by EPA 8021B	Extracted:		Jul-08-09 18:00				
	Analyzed:		Jul-11-09 17:06				
	Units/RL:		mg/L RL				
Benzene			ND 0.0010				
Toluene			ND 0.0020				
Ethylbenzene			ND 0.0010				
m,p-Xylenes			ND 0.0020				
o-Xylene			ND 0.0010				
Total Xylenes			ND 0.0010				
Total BTEX			ND 0.0010				
TDS by SM2540C	Extracted:						
	Analyzed:		Jul-07-09 15:22				
	Units/RL:		mg/L RL				
Total dissolved solids			14300 5.00				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron  
Odessa Laboratory Director



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit

\* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd, Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 337272,

Project ID: 2009-092

Lab Batch #: 765196

Sample: 533485-1-BKS / BKS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/11/09 10:38

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0314	0.0300	105	80-120	
4-Bromofluorobenzene	0.0366	0.0300	122	80-120	*

Lab Batch #: 765196

Sample: 533485-1-BSD / BSD

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/11/09 11:00

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0312	0.0300	104	80-120	
4-Bromofluorobenzene	0.0372	0.0300	124	80-120	*

Lab Batch #: 765196

Sample: 533485-1-BLK / BLK

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/11/09 11:43

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0273	0.0300	91	80-120	
4-Bromofluorobenzene	0.0167	0.0300	56	80-120	*

Lab Batch #: 765196

Sample: 337272-001 / SMP

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/11/09 17:06

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0266	0.0300	89	80-120	
4-Bromofluorobenzene	0.0189	0.0300	63	80-120	*

Lab Batch #: 765196

Sample: 337033-002 S / MS

Batch: 1 Matrix: Water

Units: mg/L

Date Analyzed: 07/12/09 07:40

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	<0.0000	0.0300	0	80-120	*
4-Bromofluorobenzene	<0.0000	0.0300	0	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14" Vac to Jal - Legacy

Work Orders : 337272,

Lab Batch #: 765196

Sample: 337033-002 SD / MSD

Batch:

Project ID: 2009-092

Matrix: Water

Units: mg/L

Date Analyzed: 07/12/09 08:02

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021B  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	<0.0000	0.0300	0	80-120	*
4-Bromofluorobenzene	<0.0000	0.0300	0	80-120	*

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



# Blank Spike Recovery



Project Name: 14" Vac to Jal - Legacy

Work Order #: 337272

Project ID:

2009-092

Lab Batch #: 764860

Sample: 764860-1-BKS

Matrix: Water

Date Analyzed: 07/08/2009

Date Prepared: 07/08/2009

Analyst: LATCOR

Reporting Units: mg/L

Batch #: 1

## BLANK /BLANK SPIKE RECOVERY STUDY

Anions by EPA 300 Analytes	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Chloride	ND	10.0	9.03	90	90-110	

Blank Spike Recovery [D] =  $100 * [C] / [B]$

All results are based on MDL and validated for QC purposes.

ND - Below Reporting Limit



# BS / BSD Recoveries



Project Name: 14" Vac to Jal - Legacy

Work Order #: 337272

Analyst: BRB

Lab Batch ID: 765196

Sample: 533485-1-BKS

Units: mg/L

Project ID: 2009-092

Date Analyzed: 07/11/2009

Matrix: Water

Date Prepared: 07/08/2009

Batch #: 1

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
Units: mg/L												
BTEX by EPA 8021B		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
Benzene		ND	0.1000	0.0924	92	0.1	0.0933	93	1	70-125	25	
Toluene		ND	0.1000	0.0872	87	0.1	0.0883	88	1	70-125	25	
Ethylbenzene		ND	0.1000	0.0961	96	0.1	0.0984	98	2	71-129	25	
m,p-Xylenes		ND	0.2000	0.1950	98	0.2	0.1992	100	2	70-131	25	
o-Xylene		ND	0.1000	0.0929	93	0.1	0.0947	95	2	71-133	25	

Analyst: WRU

Lab Batch ID: 764871

Sample: 764871-1-BKS

Units: mg/L

Date Prepared: 07/07/2009

Batch #: 1

Date Analyzed: 07/07/2009

Matrix: Water

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
TDS by SM2540C		Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes												
Total dissolved solids		ND	1000	904	90	1000	942	94	4	80-120	30	

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



## Form 3 - MS Recoveries



Project Name: 14" Vac to Jal - Legacy

Work Order #: 337272

Lab Batch #: 764860

Date Analyzed: 07/08/2009

Date Prepared: 07/08/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 337428-001 S

Batch #: 1

Matrix: Water

Reporting Units: mg/L

MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	127	100	241	114	80-120	

Matrix Spike Percent Recovery [D] =  $100 \cdot (C-A)/B$   
Relative Percent Difference [E] =  $200 \cdot (C-A)/(C+B)$   
All Results are based on MDL and Validated for QC Purposes

BPL - Below Reporting Limit





# Form 3 - MSD Recoveries



Project Name: 14" Vac to Jal - Legacy

Work Order #: 337272

Project ID: 2009-092

Lab Batch ID: 765196

QC- Sample ID: 337033-002 S

Batch #: 1 Matrix: Water

Date Analyzed: 07/12/2009

Date Prepared: 07/08/2009 Analyst: BRB

Reporting Units: mg/L

Reporting Units: mg/L												
MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY												
BTEX by EPA 8021B  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag	
	Benzene	0.0316	0.1000	ND	0	0.1000	ND	0	NC	70-125	25	X
	Toluene	0.0071	0.1000	ND	0	0.1000	ND	0	NC	70-125	25	X
	Ethylbenzene	0.0021	0.1000	ND	0	0.1000	ND	0	NC	71-129	25	X
	m,p-Xylenes	0.0080	0.2000	ND	0	0.2000	ND	0	NC	70-131	25	X
	o-Xylene	0.0041	0.1000	ND	0	0.1000	ND	0	NC	71-133	25	X

Matrix Spike Percent Recovery [D] = 100\*(C-A)/B

Relative Percent Difference RPD = 200\*(C-F)/(C+F)

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not

ApplicableN = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E



## Sample Duplicate Recovery



Project Name: 14" Vac to Jal - Legacy

Work Order #: 337272

Lab Batch #: 764860

Date Analyzed: 07/08/2009

QC- Sample ID: 337428-001 D

Reporting Units: mg/L

Date Prepared: 07/08/2009

Batch #: 1

Project ID: 2009-092

Analyst: LATCOR

Matrix: Water

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Anions by EPA 300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	127	141	10	20	

Lab Batch #: 764871

Date Analyzed: 07/07/2009

QC- Sample ID: 337179-001 D

Reporting Units: mg/L

Date Prepared: 07/07/2009

Batch #: 1

Analyst: WRU

Matrix: Water

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total dissolved solids	19700	19800	1	30	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit



Environmental Lab of Texas  
Variance/ Corrective Action Report- Sample Log-In

Client: Basim / Plains  
Date/ Time: 07/01/09 10:15  
Lab ID #: 337272  
Initials: MLH

Sample Receipt Checklist

Client Initials

#1	Temperature of container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	0.4 ° C	
#2	Shipping container in good condition?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Present	
#5	Chain of Custody present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#11	Containers supplied by ELOT?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#12	Samples in proper container/ bottle?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#13	Samples properly preserved?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#14	Sample bottles intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#15	Preservations documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#16	Containers documented on Chain of Custody?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No		
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#18	All samples received within sufficient hold time?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	See Below	
#19	Subcontract of sample(s)?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	
#20	VOC samples have zero headspace?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Not Applicable	

Variance Documentation

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken:

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event

# Analytical Report 349366

for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14-Inch Vac to Jal - Legacy**

**2009-092**

**23-OCT-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87428), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Xenco-Boca Raton (EPA Lab Code: FL00449): Florida (E86240),

South Carolina (96031001), Louisiana (04154), Georgia (917)



23-OCT-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **349366**  
**14-Inch Vac to Jal - Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 349366. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 349366 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



**Sample Cross Reference 349366**



**PLAINS ALL AMERICAN EH&S, Midland, TX**  
14-Inch Vac to Jal - Legacy

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-1	W	Oct-21-09 10:30		349366-001



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14-Inch Vac to Jal - Legacy*

*Project ID: 2009-092*

*Work Order Number: 349366*

*Report Date: 23-OCT-09*

*Date Received: 10/22/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-778519 BTEX-MTBE EPA 8021B

None





**Certificate of Analysis Summary 349366**  
**PLAINS ALL AMERICAN EH&S, Midland, TX**  
**Project Name: 14-Inch Vac to Jal - Legacy**




Project Id: 2009-092  
Contact: Jason Henry  
Project Location: Lea County, NM

Date Received in Lab: Thu Oct-22-09 08:30 am  
Report Date: 23-OCT-09  
Project Manager: Brent Barron, II

<i>Analysis Requested</i>		<i>Lab Id:</i>	<i>Field Id:</i>	<i>Depth:</i>	<i>Matrix:</i>	<i>Sampled:</i>	<i>Extracted:</i>	<i>Analyzed:</i>	<i>Units/RL:</i>
<b>BTEX by EPA 8021</b>		349366-001	MW-1		WATER	Oct-21-09 10:30	Oct-22-09 14:00	Oct-22-09 14:46	mg/L RL
Benzene							0.0125	0.0010	
Toluene							0.0049	0.0020	
Ethylbenzene							ND	0.0010	
m,p-Xylenes							ND	0.0020	
o-Xylene							ND	0.0010	
Xylenes, Total							ND	0.0010	
Total BTEX							0.0174	0.0010	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd, Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy



Work Orders : 349366,

Lab Batch #: 778519

Sample: 541341-1-BKS / BKS

Batch: 1

Project ID: 2009-092

Matrix: Water

Units: mg/L

Date Analyzed: 10/22/09 13:21

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0302	0.0300	101	80-120	

Lab Batch #: 778519

Sample: 541341-1-BSD / BSD

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 10/22/09 13:42

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0291	0.0300	97	80-120	
4-Bromofluorobenzene	0.0302	0.0300	101	80-120	

Lab Batch #: 778519

Sample: 541341-1-BLK / BLK

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 10/22/09 14:25

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0261	0.0300	87	80-120	
4-Bromofluorobenzene	0.0292	0.0300	97	80-120	

Lab Batch #: 778519

Sample: 349366-001 / SMP

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 10/22/09 14:46

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0265	0.0300	88	80-120	
4-Bromofluorobenzene	0.0302	0.0300	101	80-120	

Lab Batch #: 778519

Sample: 349366-001 S / MS

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 10/22/09 23:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0296	0.0300	99	80-120	
4-Bromofluorobenzene	0.0316	0.0300	105	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





## Form 2 - Surrogate Recoveries

Project Name: 14-Inch Vac to Jal - Legacy



Work Orders : 349366,

Lab Batch #: 778519

Sample: 349366-001 SD / MSD

Batch: 1

Project ID: 2009-092

Matrix: Water

Units: mg/L

Date Analyzed: 10/22/09 23:56

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0293	0.0300	98	80-120	
4-Bromofluorobenzene	0.0311	0.0300	104	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.





# BS / BSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 349366

Analyst: ASA

Lab Batch ID: 778519

Sample: 541341-1-BKS

Date Prepared: 10/22/2009

Batch #: 1

Project ID: 2009-092

Date Analyzed: 10/22/2009

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY												
Analytes	BTEX by EPA 8021	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0952	95	0.1	0.0941	94	1	70-125	25	
	Toluene	ND	0.1000	0.0937	94	0.1	0.0925	93	1	70-125	25	
	Ethylbenzene	ND	0.1000	0.0950	95	0.1	0.0936	94	1	71-129	25	
	m,p-Xylenes	ND	0.2000	0.2091	105	0.2	0.2064	103	1	70-131	25	
	o-Xylene	ND	0.1000	0.1013	101	0.1	0.1002	100	1	71-133	25	

Relative Percent Difference RPD =  $200 * ((C-F) / (C+F))$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MSD Recoveries



Project Name: 14-Inch Vac to Jal - Legacy

Work Order #: 349366

Project ID: 2009-092

Lab Batch ID: 778519

QC- Sample ID: 349366-001 S

Batch #: 1

Matrix: Water

Date Analyzed: 10/22/2009

Date Prepared: 10/22/2009

Analyst: ASA

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Analytes	BTEX by EPA 8021										
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	0.0125	0.1000	0.1029	90	0.1000	0.1029	90	0	70-125	25	
Toluene	0.0049	0.1000	0.0960	91	0.1000	0.0940	89	2	70-125	25	
Ethylbenzene	ND	0.1000	0.0875	88	0.1000	0.0865	87	1	71-129	25	
m,p-Xylenes	ND	0.2000	0.1941	97	0.2000	0.1893	95	3	70-131	25	
o-Xylene	ND	0.1000	0.0934	93	0.1000	0.0915	92	2	71-133	25	

Matrix Spike Percent Recovery  $[D] = 100 * (C-A) / B$   
Relative Percent Difference  $RPD = 200 * (C-F) / (C+F)$

ND = Not Detected, I = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQL = Estimated Quantitation Limit

Matrix Spike Duplicate Percent Recovery  $[G] = 100 * (F-A) / E$

# Environmental Lab of Texas

Page 1 of 1

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West 120 East  
Odessa, Texas 79705  
Phone: 432-563-1300  
Fax: 432-563-1713

Project Name: 14-Inch Vuc to Jal - Legacy

Project Manager: Camille Bryant

Company Name: Basin Environmental Service Technologies, LLC

Company Address: P.O. Box 301

Project Loc: Lea County, NM

City/State/Zip: Lovington, NM 88260

PO #: PAA - J. Henry

Telephone No: (575)603-7210

Fax No:

(505) 306-1429

Report Format:

☒ Standard

☐ TRRP

☐ NPDES

Sampler Signature: *C. S. Bryant* cibryant@basin-consulting.com

Project #: 2009-092

Lab use only:

ORDER #: 3436

Lab use only	Field Code	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Notes	Preservation & # of Containers	Analysis List
LAB 8 (lab use only)	MW-1			10/21/09	1030		1. 100% Ice 2. 100% Ice 3. 100% Ice 4. 100% Ice 5. 100% Ice 6. 100% Ice 7. 100% Ice 8. 100% Ice 9. 100% Ice 10. 100% Ice 11. 100% Ice 12. 100% Ice 13. 100% Ice 14. 100% Ice 15. 100% Ice 16. 100% Ice 17. 100% Ice 18. 100% Ice 19. 100% Ice 20. 100% Ice 21. 100% Ice 22. 100% Ice 23. 100% Ice 24. 100% Ice 25. 100% Ice 26. 100% Ice 27. 100% Ice 28. 100% Ice 29. 100% Ice 30. 100% Ice 31. 100% Ice 32. 100% Ice 33. 100% Ice 34. 100% Ice 35. 100% Ice 36. 100% Ice 37. 100% Ice 38. 100% Ice 39. 100% Ice 40. 100% Ice 41. 100% Ice 42. 100% Ice 43. 100% Ice 44. 100% Ice 45. 100% Ice 46. 100% Ice 47. 100% Ice 48. 100% Ice 49. 100% Ice 50. 100% Ice 51. 100% Ice 52. 100% Ice 53. 100% Ice 54. 100% Ice 55. 100% Ice 56. 100% Ice 57. 100% Ice 58. 100% Ice 59. 100% Ice 60. 100% Ice 61. 100% Ice 62. 100% Ice 63. 100% Ice 64. 100% Ice 65. 100% Ice 66. 100% Ice 67. 100% Ice 68. 100% Ice 69. 100% Ice 70. 100% Ice 71. 100% Ice 72. 100% Ice 73. 100% Ice 74. 100% Ice 75. 100% Ice 76. 100% Ice 77. 100% Ice 78. 100% Ice 79. 100% Ice 80. 100% Ice 81. 100% Ice 82. 100% Ice 83. 100% Ice 84. 100% Ice 85. 100% Ice 86. 100% Ice 87. 100% Ice 88. 100% Ice 89. 100% Ice 90. 100% Ice 91. 100% Ice 92. 100% Ice 93. 100% Ice 94. 100% Ice 95. 100% Ice 96. 100% Ice 97. 100% Ice 98. 100% Ice 99. 100% Ice 100. 100% Ice 	<input checked="" type="checkbox"/> Standard TAT 4 DAY <input type="checkbox"/> RUSH TAT (Pre-Schedule) 24, 48, 72 hrs <input type="checkbox"/> HCL <input type="checkbox"/> BTEX <input type="checkbox"/> Volatiles <input type="checkbox"/> Metals <input type="checkbox"/> Nutrients <input type="checkbox"/> Pesticides <input type="checkbox"/> PCBs <input type="checkbox"/> PAHs <input type="checkbox"/> TOC <input type="checkbox"/> TSS <input type="checkbox"/> pH <input type="checkbox"/> Conductivity <input type="checkbox"/> Dissolved Oxygen <input type="checkbox"/> Total Hardness <input type="checkbox"/> Total Solids <input type="checkbox"/> Total Suspended Solids <input type="checkbox"/> Total Dissolved Solids <input type="checkbox"/> Total Phosphorus <input type="checkbox"/> Total Nitrogen <input type="checkbox"/> Ammonia Nitrogen <input type="checkbox"/> Nitrate Nitrogen <input type="checkbox"/> Nitrite Nitrogen <input type="checkbox"/> Chloride <input type="checkbox"/> Sulfate <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Sodium + Potassium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt <input type="checkbox"/> Nickel <input type="checkbox"/> Vanadium <input type="checkbox"/> Molybdenum <input type="checkbox"/> Selenium <input type="checkbox"/> Bismuth <input type="checkbox"/> Antimony <input type="checkbox"/> Tellurium <input type="checkbox"/> Arsenic <input type="checkbox"/> Boron <input type="checkbox"/> Fluoride <input type="checkbox"/> Iodine <input type="checkbox"/> Bromine <input type="checkbox"/> Chlorine <input type="checkbox"/> Oxygen <input type="checkbox"/> Nitrogen <input type="checkbox"/> Carbon <input type="checkbox"/> Hydrogen <input type="checkbox"/> Sulfur <input type="checkbox"/> Phosphorus <input type="checkbox"/> Silicon <input type="checkbox"/> Aluminum <input type="checkbox"/> Potassium <input type="checkbox"/> Sodium <input type="checkbox"/> Calcium <input type="checkbox"/> Magnesium <input type="checkbox"/> Iron <input type="checkbox"/> Zinc <input type="checkbox"/> Copper <input type="checkbox"/> Manganese <input type="checkbox"/> Barium <input type="checkbox"/> Strontium <input type="checkbox"/> Cadmium <input type="checkbox"/> Lead <input type="checkbox"/> Silver <input type="checkbox"/> Chromium <input type="checkbox"/> Cobalt 

# Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Plains / Basin  
 Date/ Time: 10-22-09 00830  
 Lab ID #: 349340  
 Initials: JMF

## Sample Receipt Checklist

				Client Initials
#1	Temperature of container/ cooler?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	4.6 °C
#2	Shipping container in good condition?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	N/A
#3	Custody Seals intact on shipping container/ cooler?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Present
#4	Custody Seals intact on sample bottles/ container? / <u>12 bottles</u>	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Present
#5	Chain of Custody present?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#6	Sample instructions complete of Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#7	Chain of Custody signed when relinquished/ received?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#8	Chain of Custody agrees with sample label(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	ID written on Cont./ Lid
#9	Container label(s) legible and intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Applicable
#10	Sample matrix/ properties agree with Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#11	Containers supplied by ELOT?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#12	Samples in proper container/ bottle?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#13	Samples properly preserved?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#14	Sample bottles intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#15	Preservations documented on Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#16	Containers documented on Chain of Custody?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
#17	Sufficient sample amount for indicated test(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#18	All samples received within sufficient hold time?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	See Below
#19	Subcontract of sample(s)?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Applicable
#20	VOC samples have zero headspace?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Not Applicable

## Variance Documentation

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

- Check all that Apply:
- ☐ See attached e-mail/ fax
  - ☐ Client understands and would like to proceed with analysis
  - ☐ Cooling process had begun shortly after sampling event



# **Analytical Report 356646**

**for**

**PLAINS ALL AMERICAN EH&S**

**Project Manager: Jason Henry**

**14" Vac to Jal Legacy**

**2009-092**

**30-DEC-09**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-08-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00308), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AAL11), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-08-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-08-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370-08-TX)

Xenco-Boca Raton (EPA Lab Code: FL00449): Florida (E86240),

South Carolina (96031001), Louisiana (04154), Georgia (917)



30-DEC-09

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **356646**  
**14" Vac to Jal Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 356646. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 356646 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



**Sample Cross Reference 356646**



**PLAINS ALL AMERICAN EH&S, Midland, TX**

14" Vac to Jal Legacy

**Sample Id**

**Matrix**

**Date Collected**

**Sample Depth**

**Lab Sample Id**

SB-4 GW	W	Dec-22-09 11:15		356646-001
SB-5 GW	W	Dec-22-09 12:30		356646-002



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14" Vac to Jal Legacy*

*Project ID: 2009-092*

*Work Order Number: 356646*

*Report Date: 30-DEC-09*

*Date Received: 12/23/2009*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

*Batch: LBA-786923 Inorganic Anions by EPA 300  
E300MI*

*Batch 786923, Chloride recovered above QC limits in the Matrix Spike.*

*Samples affected are: 356646-001, -002.*

*The Laboratory Control Sample for Chloride is within laboratory Control Limits*

*Batch: LBA-787536 TDS by SM2540C*

None



# Certificate of Analysis Summary 356646

## PLAINS ALL AMERICAN EH&S, Midland, TX




Project Id: 2009-092      Date Received in Lab: Wed Dec-23-09 08:17 am  
Contact: Jason Henry      Report Date: 30-DEC-09  
Project Location: Lea County, NM      Project Manager: Brent Barron, II

<b>Analysis Requested</b>	Lab Id:	356646-001	356646-002		
	Field Id:	SB-4 GW	SB-5 GW		
	Depth:				
	Matrix:	WATER	WATER		
	Sampled:	Dec-22-09 11:15	Dec-22-09 12:30		
<b>Inorganic Anions In Water by E300</b>	Extracted:				
	Analyzed:	Dec-23-09 10:08	Dec-23-09 10:08		
	Units/RL:	mg/L RL 250	mg/L RL 250		
<b>TDS by SM2540C</b>	Extracted:				
	Analyzed:	Dec-28-09 14:40	Dec-28-09 14:40		
	Units/RL:	mg/L RL 5.00	mg/L RL 5.00		
Total dissolved solids		15700	18200	5.00	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990    Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria

- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

**Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America**

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd, Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



# Blank Spike Recovery



Project Name: 14" Vac to Jal Legacy

Work Order #: 356646

Project ID:

2009-092

Lab Batch #: 786923

Sample: 786923-1-BKS

Matrix: Water

Date Analyzed: 12/23/2009

Date Prepared: 12/23/2009

Analyst: LATCOR

Reporting Units: mg/L

Batch #: 1

## BLANK/BLANK SPIKE RECOVERY STUDY

Inorganic Anions In Water by E300	Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags
Analytes						
Chloride	ND	10.0	10.8	108	90-110	

Blank Spike Recovery [D] =  $100 \times [C] / [B]$

All results are based on MDL and validated for QC purposes.

ND - Below Reporting Limit



# BS / BSD Recoveries



Project Name: 14" Vac to Jal Legacy

Work Order #: 356646

Analyst: WRU

Lab Batch ID: 787536

Sample: 787536-1-BKS

Project ID: 2009-092

Date Analyzed: 12/28/2009

Matrix: Water

Date Prepared: 12/28/2009

Batch #: 1

Units: mg/L

BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
TDS by SM2540C	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes											
	Total dissolved solids	ND	1000	1040	104	1000	980	98	6	80-120	30

Relative Percent Difference RPD =  $200 * [(C-F) / (C+F)]$   
Blank Spike Recovery [D] =  $100 * (C) / [B]$   
Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$   
All results are based on MDL and Validated for QC Purposes





## Form 3 - MS Recoveries



Project Name: 14" Vac to Jal Legacy

Work Order #: 356646

Lab Batch #: 786923

Date Analyzed: 12/23/2009

Date Prepared: 12/23/2009

Project ID: 2009-092

Analyst: LATCOR

QC- Sample ID: 356608-001 S

Batch #: 1

Matrix: Water

Reporting Units: mg/L

### MATRIX / MATRIX SPIKE RECOVERY STUDY

Inorganic Anions by EPA 300	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes						
Chloride	133	100	244	111	90-110	X

Matrix Spike Percent Recovery [D] =  $100 \times (C-A)/B$

Relative Percent Difference [E] =  $200 \times (C-A)/(C+B)$

All Results are based on MDL and Validated for QC Purposes

Below Reporting Limit



## Sample Duplicate Recovery

Project Name: 14" Vac to Jal Legacy

Work Order #: 356646

Lab Batch #: 786923

Project ID: 2009-092

Date Analyzed: 12/23/2009

Date Prepared: 12/23/2009

Analyst: LATCOR

QC- Sample ID: 356608-001 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

SAMPLE / SAMPLE DUPLICATE RECOVERY					
Inorganic Anions In Water by E300	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Chloride	133	134	1	20	

Lab Batch #: 787536

Date Analyzed: 12/28/2009

Date Prepared: 12/28/2009

Analyst: WRU

QC- Sample ID: 356646-001 D

Batch #: 1

Matrix: Water

Reporting Units: mg/L

SAMPLE / SAMPLE DUPLICATE RECOVERY					
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Analyte					
Total dissolved solids	15700	16300	4	30	

Spike Relative Difference RPD  $200 * |(B-A)/(B+A)|$

All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

# CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

**12600 West I-20 East  
Odessa, Texas 79765**

**Phone: 432-563-1800**  
**Fax: 432-563-1713**

**Project Name: 14" Vac to Jal Legacy**

**Project #: 2009-092**

**Project Loc: Lea County, NM**

**PO #: PAA - J. Henry**

**Fax No: (505) 398-1429**

**Report Format:**

☒ Standard ☐ TRRP ☐ NPDES

cstanley@basinenv.com

350040

AS 109-250ml 100 by  
12/23/09 500

# Environmental Lab of Texas

## Variance/ Corrective Action Report- Sample Log-In

Client: Basin Environmental/Plains

Date/ Time: 12/23/09 8:17

Lab ID #: 356646

Initials: JS

### Sample Receipt Checklist

Client Initials

#1	Temperature of container/ cooler?	<u>Yes</u>	No	<u>2.6 °C</u>	
#2	Shipping container in good condition?	<u>Yes</u>	No		
#3	Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	<u>Not Present</u>	
#4	Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>Not Present</u>	
#5	Chain of Custody present?	<u>Yes</u>	No		
#6	Sample instructions complete of Chain of Custody?	<u>Yes</u>	No		
#7	Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No		
#8	Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	<u>Yes</u>	No	<u>Not Applicable</u>	
#10	Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No		
#11	Containers supplied by ELOT?	<u>Yes</u>	No		
#12	Samples in proper container/ bottle?	<u>Yes</u>	No	<u>See Below</u>	
#13	Samples properly preserved?	<u>Yes</u>	No	<u>See Below</u>	
#14	Sample bottles intact?	<u>Yes</u>	No		
#15	Preservations documented on Chain of Custody?	<u>Yes</u>	No		
#16	Containers documented on Chain of Custody?	<u>Yes</u>	No		
#17	Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No	<u>See Below</u>	
#18	All samples received within sufficient hold time?	<u>Yes</u>	No	<u>See Below</u>	
#19	Subcontract of sample(s)?	<u>Yes</u>	<u>No</u>	<u>Not Applicable</u>	
#20	VOC samples have zero headspace?	<u>Yes</u>	No	<u>Not Applicable</u>	

### Variance Documentation

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

Check all that Apply:

☐

See attached e-mail/ fax

☐

Client understands and would like to proceed with analysis

☐

Cooling process had begun shortly after sampling event

# Analytical Report 366350

for

## PLAINS ALL AMERICAN EH&S

**Project Manager: Jason Henry**

**14 Inch Vac to Jal Legacy**

**2009-092**

**24-MAR-10**



**12600 West I-20 East Odessa, Texas 79765**

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)  
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)  
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)  
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)  
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)

Xenco-Boca Raton (EPA Lab Code: FL00449):

Florida (E86240), South Carolina (96031001), Louisiana (04154), Georgia (917)

North Carolina (444), Texas (T104704468-TX), Illinois (002295)



24-MAR-10

Project Manager: **Jason Henry**  
**PLAINS ALL AMERICAN EH&S**  
1301 S. COUNTY ROAD 1150  
Midland, TX 79706

Reference: XENCO Report No: **366350**  
**14 Inch Vac to Jal Legacy**  
Project Address: Lea County, NM

**Jason Henry:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 366350. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 366350 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

**Brent Barron, II**

Odessa Laboratory Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America



**Sample Cross Reference 366350**



**PLAINS ALL AMERICAN EH&S, Midland, TX**  
14 Inch Vac to Jal Legacy

**Sample Id**

**Matrix**

**Date Collected**

**Sample Depth**

**Lab Sample Id**

MW-1

W

Mar-11-10 09:45

366350-001



## CASE NARRATIVE

*Client Name: PLAINS ALL AMERICAN EH&S*

*Project Name: 14 Inch Vac to Jal Legacy*



*Project ID: 2009-092*

*Work Order Number: 366350*

*Report Date: 24-MAR-10*

*Date Received: 03/19/2010*

---

**Sample receipt non conformances and Comments:**

None

---

**Sample receipt Non Conformances and Comments per Sample:**

None

**Analytical Non Conformances and Comments:**

Batch: LBA-799583 BTEX by EPA 8021

None





# Certificate of Analysis Summary 366350

## PLAINS ALL AMERICAN EH&S, Midland, TX

Project Name: 14 Inch Vac to Jal Legacy

Project Id: 2009-092

Contact: Jason Henry

Project Location: Lea County, NM

Date Received in Lab: Fri Mar-19-10 04:47 pm

Report Date: 24-MAR-10


Project Manager: Brent Barron, II



Analysis Requested	Lab Id:	366350-001				
	Field Id:	MW-1				
	Depth:					
	Matrix:	WATER				
	Sampled:	Mar-11-10 09:45				
BTEX by EPA 8021	Extracted:	Mar-23-10 08:00				
	Analyzed:	Mar-23-10 11:56				
	Units/RL:	mg/L RL				
	Benzene	0.0720 0.0010				
	Toluene	0.0243 0.0020				
Ethylbenzene		0.0020 0.0010				
m,p-Xylenes		ND 0.0020				
o-Xylene		0.0017 0.0010				
Xylenes, Total		0.0017 0.0010				
Total BTEX		0.1000 0.0010				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Since 1990 Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America - Atlanta - Corpus Christi

  
Brent Barron, II  
Odessa Laboratory Manager



## Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the MQL and above the SQL.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.
- BRL** Below Reporting Limit.
- RL** Reporting Limit
- \* Outside XENCO's scope of NELAC Accreditation.

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - San Antonio - Corpus Christi - Midland/Odessa - Tampa - Miami - Latin America

4143 Greenbriar Dr, Stafford, Tx 77477  
9701 Harry Hines Blvd , Dallas, TX 75220  
5332 Blackberry Drive, San Antonio TX 78238  
2505 North Falkenburg Rd, Tampa, FL 33619  
5757 NW 158th St, Miami Lakes, FL 33014  
12600 West I-20 East, Odessa, TX 79765  
842 Cantwell Lane, Corpus Christi, TX 78408

Phone	Fax
(281) 240-4200	(281) 240-4280
(214) 902 0300	(214) 351-9139
(210) 509-3334	(210) 509-3335
(813) 620-2000	(813) 620-2033
(305) 823-8500	(305) 823-8555
(432) 563-1800	(432) 563-1713
(361) 884-0371	(361) 884-9116



## Form 2 - Surrogate Recoveries

Project Name: 14 Inch Vac to Jal Legacy

Work Orders : 366350,

Lab Batch #: 799583

Sample: 558913-1-BKS / BKS

Batch: 1

Project ID: 2009-092

Matrix: Water

Units: mg/L

Date Analyzed: 03/23/10 10:04

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0271	0.0300	90	80-120	
4-Bromofluorobenzene	0.0296	0.0300	99	80-120	

Lab Batch #: 799583

Sample: 558913-1-BSD / BSD

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 03/23/10 10:26

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0281	0.0300	94	80-120	
4-Bromofluorobenzene	0.0309	0.0300	103	80-120	

Lab Batch #: 799583

Sample: 558913-1-BLK / BLK

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 03/23/10 11:34

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0240	0.0300	80	80-120	
4-Bromofluorobenzene	0.0308	0.0300	103	80-120	

Lab Batch #: 799583

Sample: 366350-001 / SMP

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 03/23/10 11:56

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0257	0.0300	86	80-120	
4-Bromofluorobenzene	0.0265	0.0300	88	80-120	

Lab Batch #: 799583

Sample: 366350-001 S / MS

Batch: 1

Matrix: Water

Units: mg/L

Date Analyzed: 03/23/10 20:11

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0268	0.0300	89	80-120	
4-Bromofluorobenzene	0.0277	0.0300	92	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## Form 2 - Surrogate Recoveries

Project Name: 14 Inch Vac to Jal Legacy

Work Orders : 366350,

Lab Batch #: 799583

Sample: 366350-001 SD / MSD

Batch: 1

Project ID: 2009-092

Matrix: Water

Units: mg/L

Date Analyzed: 03/23/10 20:33

### SURROGATE RECOVERY STUDY

BTEX by EPA 8021  Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0270	0.0300	90	80-120	
4-Bromofluorobenzene	0.0282	0.0300	94	80-120	

\* Surrogate outside of Laboratory QC limits

\*\* Surrogates outside limits; data and surrogates confirmed by reanalysis

\*\*\* Poor recoveries due to dilution

Surrogate Recovery [D] =  $100 * A / B$

All results are based on MDL and validated for QC purposes.



## BS / BSD Recoveries



Project Name: 14 Inch Vac to Jal Legacy

Work Order #: 366350

Analyst: ASA

Lab Batch ID: 799583

Sample: 558913-1-BKS

Date Prepared: 03/23/2010

Batch #: 1

Project ID: 2009-092

Date Analyzed: 03/23/2010

Matrix: Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY											
Analytes	BTEX by EPA 8021										
	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Benzene	ND	0.1000	0.0967	97	0.1	0.0999	100	3	70-125	25
	Toluene	ND	0.1000	0.0966	97	0.1	0.0987	99	2	70-125	25
	Ethylbenzene	ND	0.1000	0.0968	97	0.1	0.1008	101	4	71-129	25
	m,p-Xylenes	ND	0.2000	0.1894	95	0.2	0.1966	98	4	70-131	25
	o-Xylene	ND	0.1000	0.0910	91	0.1	0.0946	95	4	71-133	25

Relative Percent Difference RPD =  $200 * (C-F) / (C+F)$

Blank Spike Recovery [D] =  $100 * (C) / [B]$

Blank Spike Duplicate Recovery [G] =  $100 * (F) / [E]$

All results are based on MDL and Validated for QC Purposes



# Form 3 - MSD Recoveries



Project Name: 14 Inch Vac to Jal Legacy

Work Order #: 366350

Project ID: 2009-092

Lab Batch ID: 799583

QC- Sample ID: 366350-001 S

Batch #: 1 Matrix: Water

Date Analyzed: 03/23/2010

Date Prepared: 03/23/2010

Analyst: ASA

Reporting Units: mg/L

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
BTEX by EPA 8021											
Benzene	0.0720	0.1000	0.1522	80	0.1000	0.1568	85	3	70-125	25	
Toluene	0.0243	0.1000	0.1053	81	0.1000	0.1072	83	2	70-125	25	
Ethylbenzene	0.0020	0.1000	0.0831	81	0.1000	0.0839	82	1	71-129	25	
m,p-Xylenes	ND	0.2000	0.1560	78	0.2000	0.1564	78	0	70-131	25	
o-Xylene	0.0017	0.1000	0.0771	75	0.1000	0.0771	75	0	71-133	25	

Matrix Spike Percent Recovery  $[D] = 100 \times (C-A)/B$   
Relative Percent Difference  $RPD = 200 \times (C-F)/(C+F)$

Matrix Spike Duplicate Percent Recovery  $[G] = 100 \times (F-A)/E$

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable  
N = See Narrative, EQ = Estimated Quantitation Limit



# Environmental Lab of Texas

## Variance/ Corrective Action Report- Sample Log-In

Client: Basin Env. / Plains  
 Date/ Time: 3.19.10 16:47  
 Lab ID #: 366350  
 Initials: AL

### Sample Receipt Checklist

				Client Initials
#1	Temperature of container/ cooler?	<u>Yes</u>	No	3.6 °C
#2	Shipping container in good condition?	<u>Yes</u>	No	
#3	Custody Seals intact on shipping container/ cooler?	<u>Yes</u>	No	<u>Not Present</u>
#4	Custody Seals intact on sample bottles/ container?	<u>Yes</u>	No	<u>Not Present</u>
#5	Chain of Custody present?	<u>Yes</u>	No	
#6	Sample instructions complete of Chain of Custody?	<u>Yes</u>	No	
#7	Chain of Custody signed when relinquished/ received?	<u>Yes</u>	No	
#8	Chain of Custody agrees with sample label(s)?	<u>Yes</u>	No	ID written on Cont./ Lid
#9	Container label(s) legible and intact?	<u>Yes</u>	No	Not Applicable
#10	Sample matrix/ properties agree with Chain of Custody?	<u>Yes</u>	No	
#11	Containers supplied by ELOT?	<u>Yes</u>	No	
#12	Samples in proper container/ bottle?	<u>Yes</u>	No	See Below
#13	Samples properly preserved?	<u>Yes</u>	No	See Below
#14	Sample bottles intact?	<u>Yes</u>	No	
#15	Preservations documented on Chain of Custody?	<u>Yes</u>	No	
#16	Containers documented on Chain of Custody?	<u>Yes</u>	No	
#17	Sufficient sample amount for indicated test(s)?	<u>Yes</u>	No	See Below
#18	All samples received within sufficient hold time?	<u>Yes</u>	No	See Below
#19	Subcontract of sample(s)?	<u>Yes</u>	No	<u>Not Applicable</u>
#20	VOC samples have zero headspace?	<u>Yes</u>	No	Not Applicable

### Variance Documentation

Contact: \_\_\_\_\_ Contacted by: \_\_\_\_\_ Date/ Time: \_\_\_\_\_

Regarding: \_\_\_\_\_

Corrective Action Taken: \_\_\_\_\_

Check all that Apply:

☐  
☐  
☐

See attached e-mail/ fax  
 Client understands and would like to proceed with analysis  
 Cooling process had begun shortly after sampling event



## **Appendix C**

### **Photographs**



14 Inch Vac to Jal Legacy Initial Release

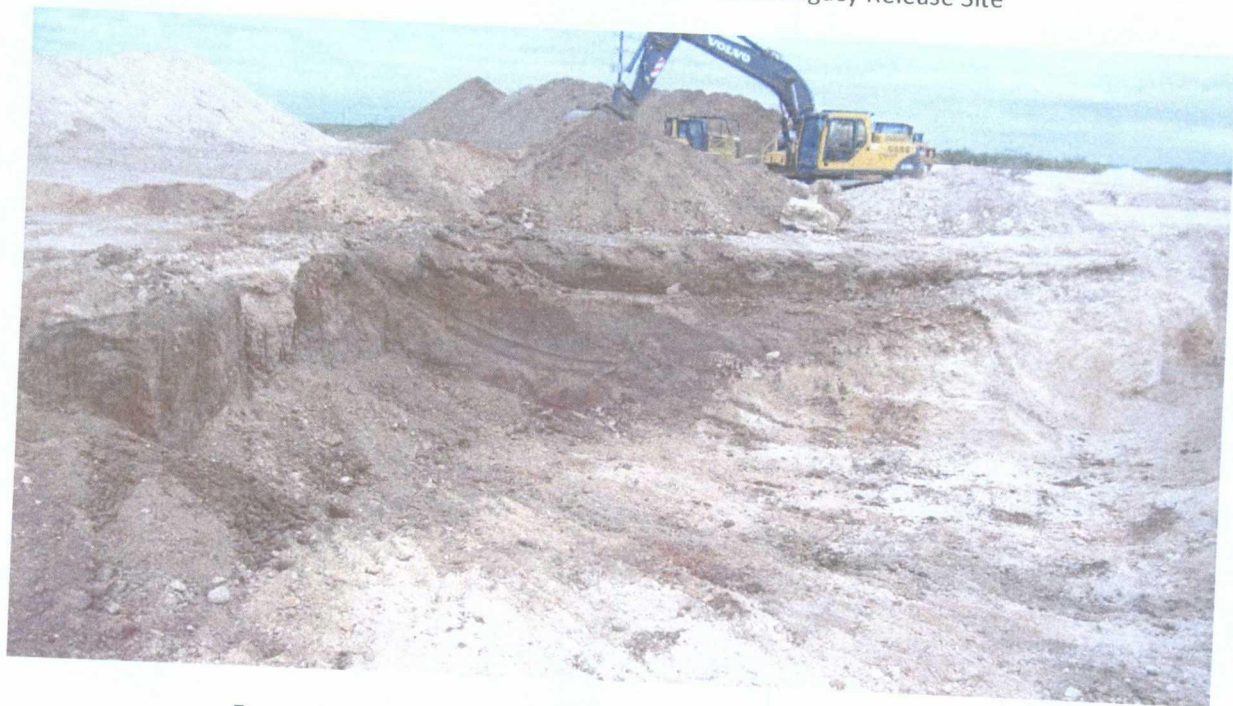


Excavation Activities at the 14 Inch Vac to Jal Legacy Release Site





Excavation Activities at the 14 Inch Vac to Jal Legacy Release Site



Excavation Activities at the 14 Inch Vac to Jal Legacy Release Site





14 Inch Vac to Jal Legacy Release Site Looking South



14 Inch Vac to Jal Legacy Release Site Looking East

**Appendix D**  
**Release Notification and Corrective**  
**Action (Form C-141)**

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

RECEIVED

APR 20 2009  
HOBBSD

Form C-14  
Revised October 10, 2001

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Plains Pipeline, LP	Contact	Jason Henry
Address	2530 Hwy 214 - Denver City, Tx 79323	Telephone No.	(575) 441-1099
Facility Name	14 - inch Vac to Jal Legacy	Facility Type	Pipeline
Surface Owner	Legacy Petroleum	Mineral Owner	
		Lease No.	

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
F	25	25S	37E					Lea

Latitude N 32° 6' 10.7" Longitude W 103° 7' 10.3"

NATURE OF RELEASE

Type of Release	Crude Oil	Volume of Release	250 bbls	Volume Recovered	0 bbls
Source of Release	14" Steel Pipeline	Date and Hour of Occurrence	04/09/2009	Date and Hour of Discovery	04/09/2009 10:00 a.m.
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Larry Johnson		
By Whom?	Jason Henry	Date and Hour	04/09/2009 @ 14:20		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.\*

Describe Cause of Problem and Remedial Action Taken.\*

During the purging of the 14-inch Sweet Vac to Jal Line, a release of crude oil occurred due to external corrosion. Throughput for the subject line is 0 bbls/day because the line is inactive and was being purged at the time of the release. The depth of the pipeline at the release point is approximately 2' bgs. The H2S concentration in the crude is less than 10 ppm and the gravity of the crude is 38.

Describe Area Affected and Cleanup Action Taken.\*

The released crude resulted in a surface stain that measured approximately 300' x 300'. The impacted area will be remediated per applicable guidelines.

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

Signature: <i>Jason Henry</i>	OIL CONSERVATION DIVISION	
Printed Name: Jason Henry	Approved by District Supervisor <i>[Signature]</i> ENVIRONMENTAL ENGINEER	
Title: Remediation Coordinator	Approval Date: 7.30.09	Expiration Date: 10.1.09
E-mail Address: jhenry@paalp.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 04/20/2009 Phone: (575) 441-1099		

\* Attach Additional Sheets If Necessary

IRP - 2162  
ISSUED 4.20.09

CORRESPONDENCE

MISC.

# **RICE Operating Company**

122 West Taylor • Hobbs, New Mexico 88240  
Phone: (505)393-9174 • Fax: (505) 397-1471

**CERTIFIED MAIL**

**RETURN RECEIPT NO. 7099 3220 0002 3946 8004**

**SEP 25 2000**

September 21, 2000

Mr. William C. Olson  
NM Energy, Minerals, and Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
2040 S. Pacheco  
Santa Fe, NM 87505

**RE: GROUND WATER CONTAMINATION  
ARCO SOUTH JUSTIS UNIT F-230  
JUSTIS SALT WATER DISPOSAL SYSTEM  
UNIT LETTER C, SEC 25, T25S, R37E  
LEA COUNTY, NEW MEXICO**

Dear Mr. Olson:

Rice Operating Company (ROC) is in receipt of your letter informing of groundwater contamination at the above-described site. ROC confirms that a Justis SWD System 4" PVC pipeline is active at this site, and to the southwest of the site, a pipeline vent is installed.

ROC was informed about this environmental project in August of 1998 by Bob Allen of Safety and Environmental Solutions, Inc., (SESI) a Hobbs NM consulting firm working for ARCO Permian. A meeting was conducted with ARCO Permian at the SESI office in Hobbs on August 24 to share information. A site investigation, visual and historic record review was conducted at that time (letter describing results is enclosed) and because of a clean boring near the pipeline and no record or evidence of accidental discharge from this pipeline or pressure vent device, it was determined that the Justis pipeline and nearby vent were not likely to have contributed to the groundwater impact at this site.

After receipt of NMOCD's August 9, 2000 request for a site investigation, ROC discussed this site impact with BP (formerly ARCO Permian), Margaret Lowe, and made plans to include BP in a near-pipeline investigative dig. ROC representatives again went to this site on August 18<sup>th</sup> and reviewed the topographical nature of the surrounding area. It was decided that on a date



suitable to ROC and BP, ROC would arrange for a backhoe, work crew, and environmental technician to be at this site and conduct the following work plan:

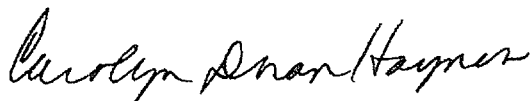
1. The vadose zone on both sides and beneath the 4" PVC pipeline will be exposed in several strategic places for sample procurement.
2. Samples will be collected from several depths at each sampling site.
3. Samples will be field analyzed for volatile hydrocarbons with a PID meter, and for chlorides by silver nitrate titration.
4. Selected samples will have field results confirmed at Cardinal Laboratory in Hobbs, NM.
5. Sample results of this work plan will be compiled and reviewed.
6. Results, interpretation, conclusion, future work plan, etc. will be submitted to NMOCD with copies to BP and any other interested parties.

An estimated timeline for this site investigation to be conducted is the first week of October, probably either the 5<sup>th</sup> or 6<sup>th</sup>. NMOCD will be notified 48 hours in advance of the event. All sampling and analysis will be conducted pursuant to NMOCD guidelines.

ROC is the service provider (operator) for the Justis Salt Water Disposal System and has no ownership of any portion of pipeline, well or facility. The Justis SWD System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis.

If you have any questions or if I can be of any service, please don't hesitate to call.

RICE OPERATING COMPANY



Carolyn Doran Haynes  
Operations Engineer

Enclosure: Letter to SESI dated 9/24/98

Cc: file, Ms. Donna Williams,  
NMOCD, District I Office  
1625 N. French Drive  
Hobbs, NM 88240

# **RICE** *Operating Company*

122 West Taylor  
HOBBS, NEW MEXICO 88240  
(505) 393-9174

September 24, 1998

Safety & Environmental Solutions, Inc.  
703 East Clinton, Suite 103  
Hobbs, New Mexico 88240

ATTN: Mr. Bob Allen, President

RE: Pit Closure  
NW/4, 25-T25S-R37E  
Lea County, New Mexico

Mr. Allen:

Rice Operating Company (ROC) has completed an initial assessment of the potential for Vent C-25 and the associated pipeline to be a source of groundwater contamination at the above-referenced site. This assessment was performed in response to the concerns expressed by Safety & Environmental Solutions, Inc. (SES) and Arco Permian during our meeting on August 24, 1998. The assessment included a review of ROC files for historical evidence of a release, a review of investigation results supplied by SES, and a visual inspection of the site.

The subject pipeline is a 4-inch PVC line that was buried approximately 2.5 feet below ground surface. Both the file review and the visual inspection of the pipeline by ROC personnel identified no evidence of an active leak or record of a historical release/spill having occurred at the site.

Based on information obtained during the ground water monitoring event conducted by SES on August 25, 1998, the depth to groundwater beneath the site ranges from approximately 60 feet to 63 feet below ground surface and the apparent direction of groundwater flow is towards the southeast. A base map depicting the top of the water table and direction of groundwater flow is enclosed.

The analytical results from the monitoring event indicate that dissolved chloride (Cl) and total dissolved solid (TDS) concentrations in the groundwater progressively increase in a downgradient direction. The two upgradient monitor wells MW-1 and MW-5 contained the lowest levels of Cl and TDS as compared to the five downgradient wells. Cl and TDS levels ranged from 1,839 mg/l Cl and 4,380 mg/l TDS in MW-1 to 24,186 mg/l Cl and 58,260 mg/l TDS in MW-6.

The analytical results indicate a significant increase in CL and TDS levels between the wells located upgradient relative to the former pit area (MW-1 and MW-5) and the wells located downgradient from the former pit (MW-2, MW-3, MW-4, MW-6, and MW-7).

As shown on the enclosed map, all seven monitor wells are located upgradient to Vent C-25. Therefore Vent C-25 is not a potential source of the groundwater contamination.

The portion of our pipeline that could be a potential source (located upgradient relative to the contamination identified in MW-6 and MW-7) is approximately 2.5 feet below ground surface. Any release from the line would have had to migrate downward through 60 feet of soil before impacting groundwater. The analytical results from soil samples collected when MW-2 was drilled recorded TPH (total petroleum hydrocarbon) and BTEX (benzene, toluene, ethylbenzene, and total xylenes) levels below method detection limits for all sampled intervals. While soil samples apparently were not collected when MW-6 and MW-7 were installed, no staining or other evidence of soil contamination was noted on the boring logs from these wells

Based on these findings, Vent C-25 and the associated pipeline are not a potential source of the groundwater contamination identified at this site.

If you have any questions, please feel free to call me at the phone number listed above.

Sincerely,

F. Wesley Root  
Projects Manager



Enclosure: Base Map

cc: KH  
JM  
File

MW-5

3,002.85'

CL - 2,396  
TDS - 5,430



MW-1

3,002.72'

CL - 1,839  
TDS - 4,380

3,002.70'

FORMER PIT AREA

Direction of  
Ground Water Flow

3,002.60'

3,002.45'

MW-4

CL - 6,910  
TDS - 13,960

3,002.50'

MW-3

3,002.47'

CL - 4,124  
TDS - 8,840

MW-2

3,002.41'

CL - 2,731  
TDS - 12,240

3,002.33' MW-6

CL - 24,186  
TDS - 58,260

3,002.40'

3,002.31'

MW-7

CL - 3,288  
TDS - 8,170

VENT C-25

CL = Chloride Concentration (mg/l)

TDS = Total Dissolved Solids Concentration (mg/l)

Contour Interval = 0.10 feet

Groundwater samples and gauging data obtained by SES on 8-25-98

RICE OPERATING CO.  
4-INCH PVC PIPELINE

Rice Operating Company  
122 W. Taylor  
Hobbs, NM 88240

Ph: (505) 393-9174 FAX 397-1471

### Map Legend

⊕ - Monitor Well Location

□ - Junction Box

Scale: 1 inch = 50 feet

### BASE MAP

Vent C-25, Justis SWD System

Ltr C, Sec 25-T25S-R37E

Lea Co. NM



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505  
(505) 827-7131

December 30, 1999

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. Z-559-572-890**

Ms. Margaret Lowe  
Arco Permian  
P.O. Box 1610  
Midland, Texas 79702

**RE: GROUND WATER/SOIL INVESTIGATION AND REMEDIATION  
SOUTH JUSTIS UNIT F-230**

Dear Ms. Lowe:

The New Mexico Oil Conservation Division (OCD) has reviewed Arco Permian's (Arco) November 15, 1999 "WORK PLAN, VADOSE ZONE GROUND WATER REMEDIATION PLAN, IDA WIMBERLY PIT, ARCO PERMIAN" and accompanying September 28, 1999 "ARCO PERMIAN, IDA WIMBERLY, SOUTH JUSTIS UNIT F-230, MONITOR WELL REPORT, LEA COUNTY, NEW MEXICO". These documents, which were submitted on behalf of Arco by their consultant Safety & Environmental Solutions, Inc, contain the results of Arco's investigation of soil and ground water contamination related to the former use of an unlined pit at Arco's South Justis Unit F-230 located in Unit C, Section 25, T25S, R37E, Lea County, New Mexico.. The documents also contain a work plan for installation of a new monitor well in the former pit, ground water quality monitoring and remediation of soil contamination.

The above referenced work plan is approved with the following conditions:

1. Arco shall sample soils from the new monitor well at 10 foot intervals from the surface. The samples shall be analyzed for concentrations of chloride, total petroleum hydrocarbons, benzene, toluene, ethylbenzene and xylene.
2. Arco shall complete the new monitor well as follows:
  - a. At least 15 feet of well screen shall be placed across the water table interface with 5 feet of the well screen above the water table and 10 feet of the well screen below the water table.
  - b. An appropriately sized gravel pack shall be set in the annulus around the well screen from the bottom of the hole to 2-3 feet above the top of the well screen.

Ms. Margaret Lowe  
December 30, 1999  
Page 2

- c. A 2-3 foot bentonite plug shall be placed in the annulus above the gravel pack.
  - d. The remainder of the annulus shall be grouted to the surface with cement containing 3-5% bentonite.
  - e. A concrete pad and locking well cover shall be placed at the surface.
  - e. The well shall be developed after construction using EPA approved procedures.
3. Arco shall wait a minimum of 24 hours after the new monitor well has been developed to purge and sample ground water from the monitor well.
  4. All soil and ground water samples shall be sampled and analyzed using EPA approved methods and quality assurance/quality control (QA/QC) procedures.
  5. Quarterly ground water sampling shall continue until the site receives approval for final closure of the soil and ground water remedial actions.
  6. All wastes generated during the investigation and remediation activities shall be disposed of at an OCD approved facility.
  7. Arco shall submit an annual report which contains the results of all investigation, remediation and monitoring activities. The report shall be submitted to the OCD Santa Fe Office by April 1 of each year with a copy provided to the OCD Hobbs District Office and shall include the following information:
    - a. A description of all investigation, remediation and monitoring activities which occurred during the past year including conclusions and recommendations.
    - b. A geologic/lithologic log and well completion diagram for each new monitor well, vapor venting well and soil boring.
    - c. A quarterly water table potentiometric map showing the location of the pit and any spills, excavated areas, monitor wells, soil borings, vapor venting wells and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient.
    - d. Quarterly isopleth maps for contaminants of concern which were observed during the investigations.

Ms. Margaret Lowe  
December 30, 1999  
Page 3

- e. Summary tables of all new soil sampling results obtained during the investigation and copies of all laboratory analytical data sheets and associated QA/QC data.
- f. Summary tables of all ground water sampling results obtained over time since initiation of ground water sampling and copies of all laboratory analytical data sheets and associated QA/QC data.
- g. The disposition of all wastes generated.

Please be advised that OCD approval does not relieve Arco of liability should the work plan fail to adequately remediate or monitor contamination related to Arco's activities, or if contamination exists which is outside the scope of the work plan. In addition, OCD approval does not relieve Arco of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,



William C. Olson  
Hydrologist  
Environmental Bureau

xc: OCD Hobbs District Office  
Beth Aldrich, Safety & Environmental Solutions, Inc.

**Work Plan  
Vadose Zone Ground Water Remediation Plan  
Ida Wimberly Pit  
ARCO Permian**

**RECEIVED**

NOV 17 1999

ENVIRONMENTAL BUREAU  
OIL CONSERVATION DIVISION

**Purpose**

The purpose of this Work Plan is to cause the closure of the abandoned pit located at the Ida Wimberly lease in a manner that will protect the population, environment and groundwater of the area surrounding the subject location. The Ida Wimberly lease is located at the ARCO Permian (ARCO) South Justis Unit F-230 in Unit C, Section 25, T25S, R37E, Lea County, New Mexico.

**Background**

In October 1997, ARCO secured the services of Safety and Environmental Solutions, Inc. to complete all necessary sampling and testing of the area covered by the abandoned pit located at the Ida Wimberly lease. ARCO owns the surface rights to Section 25 as well as part of the adjacent sections. ARCO owns the mineral rights in the NW 1/4 and the SW 1/4 NE 1/4. The remaining portion of the NE 1/4 are state mineral rights. The mineral rights of the south half of Section 25 are federal. ARCO controls the traffic on the surface of the property and also controls the disposition of the ground water under this property. (See Exhibit A- South Justis Unit Plat)

In the initial investigation, a borehole was drilled at the bottom of the pit area. The field analytical results indicated an elevated level of Total Petroleum Hydrocarbons (TPH). Knowledge of process indicates that the material in this area would be exempt oil field waste. Based upon this information, a work plan for installation of monitor wells to delineate contamination was developed. This information was reported to the New Mexico Oil Conservation Division in the report dated November 6, 1997, *ARCO Permian Work Plan Investigation of Possible Groundwater Impact, Section 25 Township 25S Range 37 E, Lea County, New Mexico*.

Upon approval of the work plan, three monitor wells were installed. The results revealed elevated levels of Chlorides and Total Dissolved Solids (TDS). This information was submitted to the New Mexico Oil Conservation Division in a report dated December 1997, *ARCO Permian Installation of Monitor Wells and Investigative Results, Section 25 Township 25S Range 37 E, Lea County, New Mexico*.

After review of these results, further delineation was deemed necessary. The installation of additional monitor wells was proposed and submitted to the New Mexico Oil Conservation Division in a report dated April 28, 1998, *ARCO Permian Amended Work Plan Investigation of Possible Groundwater Impact, Section 25 Township 25S Range 37 E, Lea County, New Mexico*. The results from this phase of the investigation were submitted under separate cover on September 28, 1999.



Shallow protectable groundwater in the area is scarce. There are two water wells within a one-mile radius of the pit. The water from these wells is currently used for livestock. This pit has not been used since before 1991 when ARCO acquired the lease. During this time, the hydrocarbons have not migrated beyond the pit boundaries. The lack of migration is confirmed by the latest sampling of the monitor wells conducted on September 24, 1999. A summary of the analysis follows:

Contaminant	MAW #1	MAW #2	MAW #3	MAW #4	MAW #5	MAW #6	MAW #7
Sodium	1157 ppm	3611 ppm	2892 ppm	8521 ppm	1355 ppm	22692ppm	3553 ppm
Calcium	296 ppm	544 ppm	448 ppm	736 ppm	312 ppm	2480 ppm	600 ppm
Magnesium	126 ppm	258 ppm	214 ppm	272 ppm	112 ppm	1458 ppm	97 ppm
Potassium	24 ppm	62 ppm	55 ppm	76 ppm	20 ppm	98 ppm	66 ppm
Conductivity	1978 ppm	1715 ppm	1679 ppm	1603 ppm	1657 ppm	1482 ppm	1523 ppm
T-Alkalinity	188 ppm	376 ppm	376 ppm	508 ppm	196 ppm	192 ppm	136 ppm
Chlorides	2231 ppm	6590 ppm	5374 ppm	14600ppm	2535 ppm	42583ppm	6387 ppm
Sulfate (SO <sub>4</sub> )	455 ppm	666 ppm	397 ppm	488 ppm	429 ppm	1428 ppm	553 ppm
Carbonate	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm	0 ppm
HCO <sub>3</sub>	229 ppm	459 ppm	459 ppm	620 ppm	239 ppm	234 ppm	166 ppm
TDS	4520 ppm	14270ppm	10330ppm	20020ppm	5100 ppm	71000ppm	12140ppm
pH	7.19	6.88	6.91	7.04	7.28	6.74	7.59
TPH	2.76 ppm	4.27 ppm	1.52 ppm	3.27 ppm	1.26 ppm	1.88 ppm	1.32 ppm
Benzene	<.002 ppm	0.003 ppm	0.005 ppm	0.033 ppm	<.002 ppm	0.003 ppm	0.008 ppm
Toluene	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm
E. Benzene	<.002 ppm	<.002 ppm	<.002 ppm	0.006 ppm	<.002 ppm	<.002 ppm	<.002 ppm
T. Xylenes	<.006 ppm	<.006 ppm	<.006 ppm	<.006 ppm	<.006 ppm	<.006 ppm	<.006 ppm

A cumulative summary of laboratory analytical results for each monitor well can be found attached as Appendix A. These results show elevated levels of Chlorides and TDS (Total Dissolved Solids) in all monitor wells from initial testing. Sulfate levels fluctuate in all wells from initial testing. Benzene has been observed in Monitor Well #4 only in all testing.

The Site Plan in Appendix B shows the location of the monitoring wells.

## Method

### Vadose Zone

ARCO proposes to begin remediation of the vadose zone by placing two soil-venting wells along the south edge of the existing pit area in order to allow oxygenation of the soils below surface. The wells will consist of 2" PVC screen contacting the vadose zone from a depth of 5' to just above the capillary fringe at an approximate depth of 50'. These wells will also allow light-end hydrocarbons to be vented to the surface. The process of introducing air to the vadose zone will enhance the process of natural attenuation.

Monitoring of the natural attenuation process will be achieved through the monitoring of the groundwater in the existing monitor wells.

### Groundwater Program

ARCO agrees to sample existing groundwater in all monitor wells quarterly for a period of 18 months that began in June 1999. The quarterly samples will be analyzed for Chlorides, Sulfate, TDS, pH, TPH, Benzene, Toluene, Ethyl-benzene, and Total Xylenes as identified in the initial sampling. The initial samples were analyzed for TPH, BTEX, Chlorides, major Cations and Anions, and Total Dissolved Solids with results filed with the NMOCD Santa Fe and Hobbs District offices.

In addition to the monitoring program, Arco will install an exploratory well in the pit area in order to assess any impact contaminants from the pits area may have had upon the ground water underlying the pit.

ARCO proposes to begin drilling the three additional wells by December 3, 1999.

# Appendix A

## Cumulative Well Data

## Ida Wimberly Cumulative Well Data

### Monitor Well #1

Contaminant	WQCC Standard	Initial Test 12/17/95	Test Date 8/25/98	Test Date 6/17/99	Test Date 9/21/99
Aluminum	5.0 ppm	<0.2 ppm	n/a	n/a	n/a
Arsenic	0.1 ppm	<0.1 ppm	n/a	n/a	n/a
Barium	1.0 ppm	<1.0 ppm	n/a	n/a	n/a
Boron	0.75 ppm	<0.75 ppm	n/a	n/a	n/a
Cadmium	0.01 ppm	<0.01 ppm	n/a	n/a	n/a
Chloride	250.0 ppm	1580 ppm	1839 ppm	1610 ppm	2231 ppm
Chromium	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Cobalt	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Copper	1.0 ppm	<0.1 ppm	n/a	n/a	n/a
Iron	1.0 ppm	.388 ppm	n/a	n/a	n/a
Lead	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Manganese	0.2 ppm	0.345 ppm	n/a	n/a	n/a
Mercury	0.002 ppm	<0.02 ppm	n/a	n/a	n/a
Molybdenum	1.0 ppm	<0.2 ppm	n/a	n/a	n/a
Nickel	0.2 ppm	<0.2 ppm	n/a	n/a	n/a
Selenium	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Silver	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Sulfate	600 ppm	1050 ppm	305 ppm	n/a	455 ppm
Zinc	10.0 ppm	<0.2 ppm	n/a	n/a	n/a
TDS	1000 ppm	3480 ppm	4380 ppm	4560 ppm	4520 ppm
pH	> 6 & <9	5.58	6.384	n/a	7.19 ppm
TPH	N/A	n/a	42.9 ppm	n/a	2.76 ppm
Benzene	0.01 ppm	<.002 ppm	<.002 ppm	n/a	<.002 ppm
Toluene	0.75 ppm	<.002 ppm	<.002 ppm	n/a	<.002 ppm
E. Benzene	0.75 ppm	<.002 ppm	<.002 ppm	n/a	<.002 ppm
Total Xylenes	0.62 ppm	<.006 ppm	<.006 ppm	n/a	<.006 ppm

Monitor Well #2

Contaminant	WQC Standard	Initial Test 12/17/97	Test Date 8/25/98	Test Date 6/17/99	Test Date 9/24/99
Aluminum	5.0 ppm	<0.2 ppm	n/a	n/a	n/a
Arsenic	0.1 ppm	<0.1 ppm	n/a	n/a	n/a
Barium	1.0 ppm	<1.0 ppm	n/a	n/a	n/a
Boron	0.75 ppm	<0.75 ppm	n/a	n/a	n/a
Cadmium	0.01 ppm	<0.01 ppm	n/a	n/a	n/a
Chloride	250.0 ppm	6200 ppm	2731 ppm	3890 ppm	6590 ppm
Chromium	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Cobalt	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Copper	1.0 ppm	<0.1 ppm	n/a	n/a	n/a
Iron	1.0 ppm	<.2 ppm	n/a	n/a	n/a
Lead	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Manganese	0.2 ppm	0.343 ppm	n/a	n/a	n/a
Mercury	0.002 ppm	<0.02 ppm	n/a	n/a	n/a
Molybdenum	1.0 ppm	<0.2 ppm	n/a	n/a	n/a
Nickel	0.2 ppm	<0.2 ppm	n/a	n/a	n/a
Selenium	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Silver	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Sulfate	600 ppm	1160 ppm	426 ppm	n/a	666 ppm
Zinc	10.0 ppm	<0.2 ppm	n/a	n/a	n/a
TDS	1000 ppm	10490 ppm	12240 ppm	7490 ppm	14270 ppm
pH	> 6 & <9	7.84	6.303	n/a	6.88
TPH	N/A	n/a	14.0 ppm	10.3 ppm	4.27 ppm
Benzene	0.01 ppm	<.002 ppm	<.002 ppm	<.002 ppm	.003 ppm
Toluene	0.75 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm
E. Benzene	0.75 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm
Total Xylenes	0.62 ppm	<.006 ppm	<.006 ppm	<.006 ppm	<.006 ppm

Monitor Well #3

Contaminant	WQCC Standard	Initial Test 12/17/97	Test Date 8/25/98	Test Date 6/17/99	Test Date 9/24/99
Aluminum	5.0 ppm	<0.3 ppm	n/a	n/a	n/a
Arsenic	0.1 ppm	<0.1 ppm	n/a	n/a	n/a
Barium	1.0 ppm	<1.0 ppm	n/a	n/a	n/a
Boron	0.75 ppm	<0.75 ppm	n/a	n/a	n/a
Cadmium	0.01 ppm	<0.01 ppm	n/a	n/a	n/a
Chloride	250.0 ppm	8500 ppm	4124 ppm	7570 ppm	5374 ppm
Chromium	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Cobalt	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Copper	1.0 ppm	<0.1 ppm	n/a	n/a	n/a
Iron	1.0 ppm	<2 ppm	n/a	n/a	n/a
Lead	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Manganese	0.2 ppm	0.440 ppm	n/a	n/a	n/a
Mercury	0.002 ppm	<0.02 ppm	n/a	n/a	n/a
Molybdenum	1.0 ppm	<0.2 ppm	n/a	n/a	n/a
Nickel	0.2 ppm	<0.2 ppm	n/a	n/a	n/a
Selenium	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Silver	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Sulfate	600 ppm	1280 ppm	279 ppm	n/a	397 ppm
Zinc	10.0 ppm	<0.2 ppm	n/a	n/a	n/a
TDS	1000 ppm	15300 ppm	8840 ppm	15180 ppm	10330 ppm
pH	> 6 & <9	7.77	6.64	n/a	6.91
TPH	N/A	n/a	24.6 ppm	n/a	n/a
Benzene	0.01 ppm	<.002 ppm	<.002 ppm	<.002 ppm	.005 ppm
Toluene	0.75 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm
E. Benzene	0.75 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm
Total Xylenes	0.62 ppm	<.006 ppm	<.006 ppm	<.006 ppm	<.006 ppm

Monitor Well #4

Contaminant	WQCC Standard	Initial Test 8/10/98	Test Date 8/25/98	Test Date 6/17/00	Test Date 9/21/00
Aluminum	5.0 ppm	<0.3 ppm	n/a	n/a	n/a
Arsenic	0.1 ppm	<0.1 ppm	n/a	n/a	n/a
Barium	1.0 ppm	<1.0 ppm	n/a	n/a	n/a
Boron	0.75 ppm	<0.75 ppm	n/a	n/a	n/a
Cadmium	0.01 ppm	<0.01 ppm	n/a	n/a	n/a
Chloride	250.0 ppm	9641 ppm	6910 ppm	4680 ppm	14600 ppm
Chromium	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Cobalt	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Copper	1.0 ppm	<0.1 ppm	n/a	n/a	n/a
Iron	1.0 ppm	<.2 ppm	n/a	n/a	n/a
Lead	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Manganese	0.2 ppm	0.440 ppm	n/a	n/a	n/a
Mercury	0.002 ppm	<0.02 ppm	n/a	n/a	n/a
Molybdenum	1.0 ppm	<0.2 ppm	n/a	n/a	n/a
Nickel	0.2 ppm	<0.2 ppm	n/a	n/a	n/a
Selenium	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Silver	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Sulfate	600 ppm	159 ppm	335 ppm	n/a	488 ppm
Zinc	10.0 ppm	<0.2 ppm	n/a	n/a	n/a
TDS	1000 ppm	13580 ppm	13960 ppm	9460 ppm	20020 ppm
pH	> 6 & <9	6.69	6.64	n/a	7.04
TPH	N/A	<1.0 ppm	11.8 ppm	n/a	3.27 ppm
Benzene	0.01 ppm	0.033 ppm	0.046 ppm	0.003 ppm	0.033 ppm
Toluene	0.75 ppm	<.002 ppm	<.002 ppm	<.002 ppm	<.002 ppm
E. Benzene	0.75 ppm	<.007 ppm	.012 ppm	<.002 ppm	0.006 ppm
Total Xylenes	0.62 ppm	<.006 ppm	<.006 ppm	<.006 ppm	<.006 ppm

Monitor Well #5

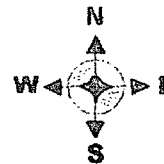
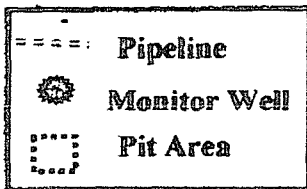
Contaminant	WQCC Standard	Initial Test 8/10/98	Test Date 8/25/98	Test Date 6/17/99	Test Date 9/24/99
Aluminum	5.0 ppm	<0.3 ppm	n/a	n/a	n/a
Arsenic	0.1 ppm	<0.1 ppm	n/a	n/a	n/a
Barium	1.0 ppm	<1.0 ppm	n/a	n/a	n/a
Boron	0.75 ppm	<0.75 ppm	n/a	n/a	n/a
Cadmium	0.01 ppm	<0.01 ppm	n/a	n/a	n/a
Chloride	250.0 ppm	1950 ppm	2396 ppm	2090 ppm	2535 ppm
Chromium	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Cobalt	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Copper	1.0 ppm	<0.1 ppm	n/a	n/a	n/a
Iron	1.0 ppm	<2 ppm	n/a	n/a	n/a
Lead	0.05 ppm	<0.05 ppm	n/a	n/a	n/a
Manganese	0.2 ppm	0.440 ppm	n/a	n/a	n/a
Mercury	0.002 ppm	<0.02 ppm	n/a	n/a	n/a
Molybdenum	1.0 ppm	<0.2 ppm	n/a	n/a	n/a
Nickel	0.2 ppm	<0.2 ppm	n/a	n/a	n/a
Selenium	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Silver	0.05 ppm	<0.1 ppm	n/a	n/a	n/a
Sulfate	600 ppm	138 ppm	274 ppm	n/a	429 ppm
Zinc	10.0 ppm	<0.2 ppm	n/a	n/a	n/a
TDS	1000 ppm	3790 ppm	5430 ppm	5300 ppm	5100 ppm
pH	> 6 & <9	7.14	7.216	n/a	7.28
TPH	N/A	<1.0 ppm	11.0 ppm	n/a	1.26 ppm
Benzene	0.01 ppm	<.002 ppm	<.002 ppm	n/a	<.002 ppm
Toluene	0.75 ppm	<.002 ppm	<.002 ppm	n/a	<.002 ppm
E. Benzene	0.75 ppm	<.002 ppm	<.002 ppm	n/a	<.002 ppm
Total Xylenes	0.62 ppm	<.006 ppm	<.006 ppm	n/a	<.006 ppm



Monitor Well #6

Contaminant	WQCC Standard	Initial Test 8/11/98	Test Date 8/25/98	Test Date 6/17/99	Test Date 9/24/99
Aluminum	5.0 ppm	n/a	n/a	n/a	n/a
Arsenic	0.1 ppm	n/a	n/a	n/a	n/a
Barium	1.0 ppm	n/a	n/a	n/a	n/a
Boron	0.75 ppm	n/a	n/a	n/a	n/a
Cadmium	0.01 ppm	n/a	n/a	n/a	n/a
Chloride	250.0 ppm	29600 ppm	24186 ppm	25500 ppm	42583 ppm
Chromium	0.05 ppm	n/a	n/a	n/a	n/a
Cobalt	0.05 ppm	n/a	n/a	n/a	n/a
Copper	1.0 ppm	n/a	n/a	n/a	n/a
Iron	1.0 ppm	n/a	n/a	n/a	n/a
Lead	0.05 ppm	n/a	n/a	n/a	n/a
Manganese	0.2 ppm	n/a	n/a	n/a	n/a
Mercury	0.002 ppm	n/a	n/a	n/a	n/a
Molybdenum	1.0 ppm	n/a	n/a	n/a	n/a
Nickel	0.2 ppm	n/a	n/a	n/a	n/a
Selenium	0.05 ppm	n/a	n/a	n/a	n/a
Silver	0.05 ppm	n/a	n/a	n/a	n/a
Sulfate	600 ppm	n/a	750 ppm	1200 ppm	1428 ppm
Zinc	10.0 ppm	n/a	n/a	n/a	n/a
TDS	1000 ppm	58260 ppm	58260 ppm	53980 ppm	71000 ppm
pH	> 6 & < 9	n/a	6.829	n/a	6.74
TPH	N/A	<1.0 ppm	6.8 ppm	n/a	1.88 ppm
Benzene	0.01 ppm	0.044 ppm	0.007 ppm	n/a	0.003 ppm
Toluene	0.75 ppm	0.004 ppm	<.002 ppm	n/a	<.002 ppm
E. Benzene	0.75 ppm	<.002 ppm	<.002 ppm	n/a	<.002 ppm
Total Xylenes	0.62 ppm	0.009ppm	<.006 ppm	n/a	<.006 ppm

## Appendix B Site Plan



MW #5  
 693' FNL  
 1277' FWL  
 TOW 3002.69'

MW #1  
 742' FNL  
 1406' FWL  
 TOW 3002.56'

Lease Road

Proposed Well

MW #4  
 937' FNL  
 1449' FWL  
 TOW 3002.36'

MW #2  
 981' FNL  
 1420' FWL  
 TOW 3002.36'

MW #3  
 970' FNL  
 1497' FWL  
 TOW 3002.30'

MW #7  
 1056' FNL  
 14366' FWL  
 TOW 3002.25'

MW #6  
 1017' FNL  
 1526' FWL  
 TOW 3002.06'

Section 25,  
 Township 25 South  
 Range 37 East N.M.P.M.

ARCO Permian

Site Plan  
 South Justis F-230  
 Monitor Wells

Safety & Environmental  
 Solutions, Inc.  
 Hobbs, New Mexico



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505  
(505) 827-7131

March 22, 1999

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-274-520-636**

Ms. Margaret Lowe  
Arco Permian  
P.O. Box 1610  
Midland, Texas 79702

**RE: GROUND WATER/SOIL INVESTIGATION  
SOUTH JUSTIS UNIT F-230**

Dear Ms. Lowe:

The New Mexico Oil Conservation Division (OCD) has reviewed Arco Permian's (Arco) February 10, 1999 correspondence and 2 accompanying undated documents titled "ARCO PERMIAN SOUTH JUSTIS UNIT F-230, INSTALLATION OF ADDITIONAL MONITOR WELLS AND INVESTIGATION RESULTS, LEA COUNTY, NEW MEXICO" and "ARCO PERMIAN SOUTH JUSTIS UNIT F-230, IDA WIMBERLY LEASE, WORK PLAN, VADOSE ZONE REMEDIATION, LEA COUNTY, NEW MEXICO". These documents, which were submitted on behalf of Arco by their consultant Safety & Environmental Solutions, Inc, contain the results of Arco's investigation of soil and ground water contamination related to the former use of an unlined pit at Arco's South Justis Unit F-230 located in Unit C, Section 25, T25S, R37E, Lea County, New Mexico. The documents also contain a work plan for capping and leaving existing soil contamination in place on the assumption that hydrocarbons will not migrate from the pit.

A review of the above referenced documents and prior reports on the site shows that hydrocarbons have already migrated from the pit into ground water and contaminated ground water in excess of New Mexico Water Quality Control Commission (WQCC) ground water standards. Ground water contamination at the site will not be abated as long as a source of contaminants still exists in the soils overlying the ground water. Therefore, the above referenced work plan to not remediate the source of the contamination and cap the pit is denied. The OCD requires that Arco submit an alternate work plan to the OCD Santa Fe Office by April 30, 1999 with a copy provided to the OCD Hobbs District Office. The work plan shall include a soil and ground water remediation plan as well as a plan for monitoring ground water quality in all site monitor wells.

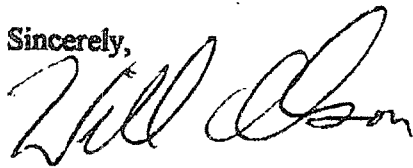
In addition, the investigations have shown that salts exist in the pit soils and have migrated from the pit to the ground water. Arco concludes that the source of these salts is an adjacent produced water

Ms. Margaret Lowe  
March 22, 1999  
Page 2

pipeline. In order to assess whether the pit or the pipeline is the source of this contamination please provide the OCD with information on the types of wastes which were placed in the pit, the name of the operator of the pipeline and any evidence of releases from the pipeline. Please provide this information along with the above required work plan.

If you have any questions, please call me at (505) 827-7154.

Sincerely,



William C. Olson  
Hydrologist  
Environmental Bureau

xc: OCD Hobbs District Office  
Beth Aldrich, Safety & Environmental Solutions, Inc.

Z 274 520 636

US Postal Service

**Receipt for Certified Mail**

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

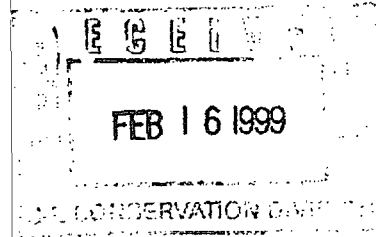
Sent to	
Street & Number	
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995

# Safety & Environmental Solutions, Inc.

February 10, 1999

Mr. Bill Olsen  
New Mexico Oil Conservation Division  
2040 S. Pacheco Street  
Santa Fe, New Mexico 87505



Dear Mr. Olsen:

Please find enclosed the corrected reports for the Arco Permian South Justis Monitor well installation in Lea County, New Mexico. Also enclosed in the proposed Work Plan for Vadose Zone Remediation at the pit. This work plan will be implemented upon your approval.

If you have any questions or comments, please call. Thank you.

Sincerely,

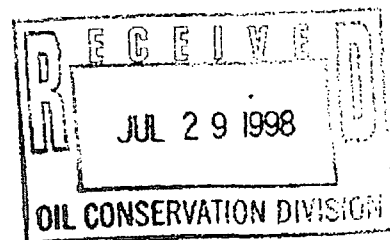
*Beth Aldrich*  
Beth Aldrich

BA/nh  
enclosure

# Safety & Environmental Solutions, Inc.

July 23, 1998

Mr. Bill Olsen  
New Mexico Oil Conservation Division  
2040 South Pacheco  
Santa Fe, NM 87505



Dear Mr. Olsen:

As agreed to in our conversation on July 23, 1998, your office will receive the Additional Monitor Well Investigation Results report for the Arco Permian South Justis Unit F-230 by September 4, 1998. This extension is due to the problems encountered with obtaining a drilling unit. We are tentatively scheduled to drill these monitor wells the week of August 10, 1998.

If you have any questions please don't hesitate to call. Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read "Beth A. Aldrich".

Beth A. Aldrich for  
Bob Allen, President  
SES, Inc.

Cc: Margaret Lowe  
Larry Henson

BA/baa



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505  
(505) 827-7131

June 10, 1998

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-235-437-285**

Ms. Margaret Lowe  
Arco Permian  
P.O. Box 1610  
Midland, Texas 79702

**RE: GROUND WATER INVESTIGATIONS  
SOUTH JUSTIS UNIT F-230**

Dear Ms. Lowe:

The New Mexico Oil Conservation Division (OCD) has reviewed the following Arco Permian (Arco) documents which were submitted on behalf of Arco by their consultant Safety & Environmental Solutions, Inc.:

- December 1997 "ARCO PERMIAN SOUTH JUSTIS UNIT F-230, INSTALLATION OF MONITOR WELLS AND INVESTIGATION RESULTS, LEA COUNTY, NEW MEXICO" which was received by the OCD on March 2, 1998.
- April 28, 1998 "ARCO PERMIAN SOUTH JUSTIS UNIT F-230, AMENDED WORK PLAN, INVESTIGATION OF POSSIBLE GROUNDWATER IMPACT, LEA COUNTY, NEW MEXICO".

These documents contain the results of Arco's investigation of the soil and ground water contamination and an amended work plan for additional investigations of the extent of ground water contamination related to Arco's activities at the South Justis Unit F-230 located in Unit C, Section 25, T25S, R37E, Lea County, New Mexico.

The above referenced work plan is approved with the following conditions:

1. Ground water from all of the monitor wells will be sampled and analyzed for benzene, toluene, ethylbenzene, xylene (BTEX), cations and anions and total dissolved solids (TDS) using EPA approved methods and quality assurance/quality control procedures.



Ms. Margaret Lowe  
June 10, 1998  
Page 2

2. Arco will submit a report on the investigation actions to the OCD by August 10, 1998. The report will contain:
  - a. A description of all activities conducted including conclusions and recommendations.
  - b. A site map showing the monitor well locations and other pertinent site features.
  - c. A ground water potentiometric map created using the water table elevations from all site monitor wells. The map will show the direction and magnitude of the hydraulic gradient at the site.
  - d. Geologic logs and well completion diagrams for all site monitor wells.
  - e. A summary of the water quality sampling analyses including copies of the laboratory analytical results and the associated quality assurance/quality control data.
  - f. The disposition of all wastes generated.
3. Arco will notify the OCD at least 48 hours prior to all scheduled activities such that the OCD has the opportunity to witness the activities and split samples.

Pleased be advised that OCD approval does not relieve Arco of liability if the work plan fails to adequately define the extent of contamination related to Arco's activities. In addition, OCD approval does not relieve Arco of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,



William C. Olson  
Hydrogeologist  
Environmental Bureau

xc: Wayne Price, OCD Hobbs District Office  
Bob Allen, Safety & Environmental Solutions, Inc.

Z 235 437 285

US Postal Service

**Receipt for Certified Mail**

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to	
Street & Number	
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
<b>TOTAL Postage &amp; Fees</b>	<b>\$</b>
Postmark or Date	

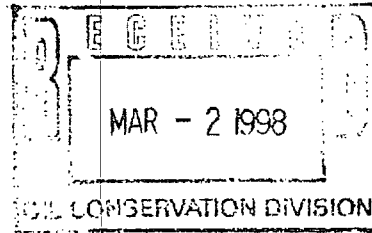
PS Form 3800, April 1995

# Safety & Environmental Solutions, Inc.

---

February 25, 1998

Mr. Bill Olsen  
New Mexico Oil Conservation Division  
2040 South Pacheco  
Santa Fe, NM 87505



Dear Mr. Olsen:

Please find enclosed an Installation of Monitor Wells and Investigation Results report for your file for Arco South Justis Unit F-23. Mr. Allen would appreciate your perusal and response as quickly as possible to discuss further exploration methods on this project.

If you have any questions please don't hesitate to call. Thank you.

Sincerely,

Beth A. Aldrich for  
Bob Allen, President  
SES, Inc.

Enclosures

BA/baa



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION  
2040 S. PACHECO  
SANTA FE, NEW MEXICO 87505  
(505) 827-7131

November 25, 1997

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-410-431-232**

Ms. Margaret Lowe  
Arco Permian  
P.O. Box 1610  
Midland, Texas 79702

**RE: GROUND WATER INVESTIGATION  
SOUTH JUSTIS UNIT F-230**

Dear Ms. Lowe:

The New Mexico Oil Conservation Division (OCD) has reviewed Arco Permian's (Arco) November 11, 1997 "ARCO PERMIAN SOUTH JUSTIS UNIT F-230, WORK PLAN, INVESTIGATION OF POSSIBLE GROUNDWATER IMPACT, LEA COUNTY, NEW MEXICO" which was submitted on behalf of Arco by their consultant Safety & Environmental Solutions, Inc. This document contains Arco's work plan to determine the extent of ground water contamination related to Arco's activities at the South Justis Unit F-230 located in Unit C, Section 25, T25S, R37E, Lea County, New Mexico.

The above referenced work plan is approved with the following conditions:

1. Ground water from all of the monitor wells will be sampled and analyzed for benzene, toluene, ethylbenzene, xylene (BTEX), polynuclear aromatic hydrocarbons, Water Quality Control Commission (WQCC) metals and cations and anions using EPA approved methods and quality assurance/quality control procedures.
2. Arco will submit a report on the investigation actions to the OCD by January 23, 1997. The report will contain:
  - a. A description of all activities conducted including conclusions and recommendations.
  - b. A map showing the monitor well locations and the direction and magnitude of the hydraulic gradient and other pertinent site features.
  - c. Geologic logs and well completion diagrams for each monitor well.

Ms. Margaret Lowe  
November 25, 1997  
Page 2

- d. The laboratory analytical results of all soil and water quality sampling including the quality assurance/quality control data.
  - e. The disposition of all wastes generated.
3. Arco will notify the OCD at least 48 hours prior to all scheduled activities such that the OCD has the opportunity to witness the activities and split samples.

Pleased be advised that OCD approval does not relieve Arco of liability if the work plan fails to adequately define the extent of contamination related to Arco's activities. In addition, OCD approval does not relieve Arco of responsibility for compliance with any other federal, state or local laws and regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,



William C. Olson  
Hydrogeologist  
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Supervisor  
Bob Allen, Safety & Environmental Solutions, Inc.

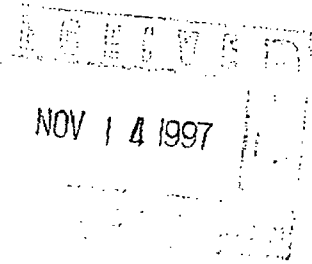
P 410 431 232	
US Postal Service	
<b>Receipt for Certified Mail</b>	
No Insurance Coverage Provided	
Do not use for International Mail (See reverse)	
Sent to	
Street & Number	
Post Office, State, & ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995

# Safety & Environmental Solutions, Inc.

November 11, 1997

Mr. Roger Anderson  
New Mexico Oil Conservation Division  
2040 S. Pacheco Street  
Santa Fe, New Mexico 87505



Dear Mr. Anderson:

Please consider this letter as your formal notification of a possible groundwater impact by hydrocarbons in Unit C of Section 25 Township 25S Range 37E in Lea County, New Mexico. This location is an abandoned pit operated by Arco Permian.

I have enclosed a work plan for the initial investigation of this contamination and will pursue the full delineation of contamination after analysis of the results of the initial investigation.

Please consider the work plan as the first phase of the work to be done on this project. If the plan meets with your approval, kindly contact me by phone as the scheduling of equipment in this area has become a problem. This work plan will be implemented immediately upon your approval and successful scheduling of the necessary equipment.

Thank you for your consideration in this matter.

Sincerely,

Bob Allen REM  
President

BA/nh  
enclosure

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone

☐ Personal

Time

9:19 AM

Date

10/29/97

Originating Party

Other Parties

Bob Allen - SAFETY & ENV. SVCS

R. ANDERSON

Subject

GW CONTAMINATION

Discussion

While prospecting apt for Arco Permian at UL C Sec. 25 25S 37E free oil was encountered at 55 feet. GW is estimated at 65 feet. TPH at 50 feet was 10000 ppm. SVES will submit a workplan.

Conclusions or Agreements

Distribution

Bill Olson

Signed

R. Anderson