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RESOURCES

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April 1, 2014

New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Attn: Glenn von Gonten

Re: **Julander Federal #1E**
Groundwater Investigation Report

Dear Mr. von Gonten:

Enclosed is a Site Investigation Report prepared by Animas Environmental Services concerning the groundwater investigation work conducted on the subject well location. The original Groundwater Investigation Work Plan was submitted to the New Mexico Oil Conservation Division on April 19, 2013 and updated on June 6, 2013.

If there are any questions or concerns with this submittal, please contact me at 505-324-4131.

Sincerely,

Ed Hasely
Sr. Environmental Engineer
Energen Resources

Attachments: Site Investigation Report (3/26/14)

Cc: HSE File
Facility File
Correspondence

Animas Environmental Services, LLC
www.animasenvironmental.com
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Prepared for:

Ed Hasely
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Site Investigation Report
Julander Federal #1E
NE¼ SW¼, Section 31, T29N, R11W
San Juan County, New Mexico

March 26, 2014

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1.0 Introduction

On behalf of Energen Resources Corporation (Energen), Animas Environmental Services, LLC (AES) has prepared this site investigation report associated with a condensate tank release that was discovered at the Julander Federal #1E on January 14, 2013. The investigation was completed in accordance with the *Groundwater Investigation Work Plan, Julander Federal #1E* dated April 18, 2013 and updates in June 2013.

This report documents soil boring and monitor well installation, well development, groundwater monitoring and sampling, and a soil vapor extraction (SVE) pilot study completed at the site in accordance with New Mexico Oil Conservation Division (NMOCD) and New Mexico Environment Department (NMED) Ground Water Quality Bureau (GWQB) regulations.

2.0 Site Information

2.1 Location

Location - NE¼ SW¼, Section 31, T29N, R11W, San Juan County, New Mexico.
Latitude/Longitude - N36.67936 and W108.03514, respectively.
Surface Owner – Private
Figure 1. Topographic Site Location Map
Figure 2. Aerial Site Map

2.2 NMOCD Ranking

In accordance with NMOCD release protocols, action levels were established per NMOCD *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993) prior to the initial assessment. The release was given a ranking score of 30 based on the following factors:

- **Depth to Groundwater:** Based on groundwater measurements during groundwater monitoring activities, groundwater ranges from approximately 33 to 41 feet below ground surface (bgs). (20 points)
- **Wellhead Protection Area:** The release location is not within a wellhead protection area. However, two nearby, private water wells were identified on the New Mexico Office of the State Engineer (NMOSE) database; one reported at approximately 290 feet to the southwest and another at approximately 550 feet to the northeast. (0 points)
- **Distance to Surface Water Body:** An unnamed wash which discharges to the San Juan River is located approximately 920 feet west of the release location. (10 points)

The ranking score 30 dictates that concentration for impacted soils left in place must be below the NMOCD action levels of 10 mg/kg benzene, 50 mg/kg total benzene, toluene, ethylbenzene, and xylenes (BTEX), and 100 mg/kg total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) and diesel range organics (DRO).

3.0 Site History

As a result of the freezing and breaking of a production tank valve, a release of approximately 96 bbls of natural gas condensate within the production tank secondary containment area was discovered on January 14, 2013. Subsequently, Energen excavated and transported off-site approximately 3,356 cubic yards of petroleum hydrocarbon contaminated soil. The excavation extended to an approximate depth of 45 feet bgs, where water seepage into excavation occurred, and excavation conditions became unstable. Therefore, the excavation was backfilled, and one investigation well, MW-1, was installed by Envirotech, Inc. (Envirotech) to determine if groundwater had been impacted. Groundwater laboratory analytical results from MW-1 reported 23.8 µg/L benzene, 289 µg/L toluene, 401 µg/L ethylbenzene, and 3,290 µg/L xylene concentrations. Benzene and xylene concentrations exceeded the New Mexico Water Quality Control Commission (WQCC) standards of 10 µg/L (benzene) and 620 µg/L (total xylene). The Envirotech soil boring log and laboratory analytical report are included in Appendix A.

4.0 Site Investigation 2013

Based on the analytical results described in the previous section, a groundwater investigation was proposed in order to delineate the extent of the dissolved phase hydrocarbon contaminants associated with the release. The investigation procedures were designed to be protective of both surface water and groundwater and are based upon protocols outlined in AES' Standard Operating Procedures (SOPs). SOPs follow applicable NMOCD guidelines, American Society for Testing and Materials (ASTM) standards, and applicable U.S. Environmental Protection Agency (USEPA) methods and guidelines for soil and groundwater sampling.

Between April and August 2013, AES installed seven soil borings (SB-1 through SB-7) which were completed as one- and two-inch diameter monitor wells in the vicinity of the release location. Groundwater was encountered in each soil boring at depths ranging from 37 feet to 40 feet bgs while drilling. Soil boring/monitor well locations are presented on Figure 2, and a photographic log is presented in Appendix B.

Specific project tasks by date are listed below:

- **March 2013:** Installation of MW-1 by Envirotech; Groundwater monitoring and sampling by Envirotech;

- **April and May 2013**: Installed three soil borings completed as one- and two-inch diameter monitor wells (SB-1/MW-2, SB-2/MW-4, and SB-3/MW-3); Groundwater monitoring and sampling;

- **August 2013**: Installed four soil borings completed as two-inch diameter monitor wells (SB-4/MW-5, SB-5/MW-6, SB-6/MW-7, and SB-7/MW-8); Quarterly groundwater monitoring and sampling;

- **October and November 2013**: Conducted SVE pilot study; Quarterly groundwater monitoring and sampling; and

- **February 2014**: Quarterly groundwater monitoring and sampling.

4.1 Pre-Field Coordination and Job Safety Analysis

Prior to field work, AES utilized the New Mexico One-Call system to identify and mark all underground utilities at the site. Additionally, AES prepared and implemented a comprehensive site-specific Job Safety Analysis (JSA) addressing the activities associated with soil boring installation and soil and groundwater sampling. All onsite personnel were required to read and sign the JSA to acknowledge their understanding of the information contained within the JSA. The JSA was implemented and enforced on site by the assigned Site Safety and Health Officer.

4.2 Soil Boring/Monitor Well Installation, April, May and August 2013

On April 29 and May 1, 2013, AES installed three soil borings which were completed as monitor wells (SB-1/MW-2, SB-2/MW-4, and SB-3/MW-3). Monitor well MW-2 was completed as a 1-inch diameter well, whereas MW-3 and MW-4 were completed as 2-inch diameter wells. Additionally, between August 14 and 16, 2013, AES installed four soil borings which were subsequently completed as 2-inch diameter wells (SB-4/MW-5, SB-5/MW-6, SB-6/MW-7 and SB-7/MW-8).

4.2.1 Drilling Methods

Soil boring SB-1 was completed with a Simco truck-mounted direct push rig operated by Kyvek Energy Services (Kyvek), Aztec, New Mexico. Soil borings SB-2 and SB-3 were completed with a

CME-75 drill rig utilizing hollow stem augers (HSA) and was also operated by Kyvek. Soil borings SB-4 through SB-7 were completed with a CME-75 drill rig utilizing HSA operated by Enviro-Drill, Inc., Albuquerque, New Mexico.

4.2.2 Soil Sample Collection

Soil samples for SB-1 were collected at 4-foot intervals from continuously driven core-barrel samplers during advancement of the soil borings. Soil samples from SB-2 and SB-7 were collected a 5-foot intervals from split-spoon samplers. Soil samples were collected from the samplers and transferred to appropriately labeled sample containers. The sample was split for field screening of volatile organic compounds (VOCs) with a photo-ionization detector (PID) organic vapor meter (OVM) and laboratory analysis. Selected soil samples were collected for laboratory analysis from each boring.

For each soil boring, a Soil Boring Log was completed. These logs recorded sample identification, depth collected, and method of collection, as well as observations of soil moisture, color, grain size, contaminant presence, and overall stratigraphy. Soil Boring Logs are presented in Appendix C.

4.2.3 Soil Field Screening

Samples were field screened for VOC vapors utilizing a PID-OVM, which was calibrated to 100 ppm with isobutylene gas. Field screening followed AES' SOP for heated headspace analysis of VOCs.

4.2.4 Soil Laboratory Analyses

All soil samples collected from the soil borings were submitted to Hall Environmental Analysis Laboratory (Hall), Albuquerque, New Mexico, for analysis of the following parameters:

- BTEX per USEPA Method 8021B; and
- TPH (GRO/DRO) per USEPA Method 8015D.

Once collected, all samples were preserved in laboratory-supplied containers and stored in an insulated cooler containing ice. Samples were shipped by Hall personnel in insulated coolers containing ice at less than 6°C via bus to the analytical laboratory.

4.2.5 Groundwater Monitor Well Construction

Monitor well MW-2 construction consisted of 1.4-inch outside diameter (0.75-inch inside diameter) pre-packed screen (0.010-inch slot) and 1.0-inch blank riser casing. The screen is factory packed with 20/40 Colorado silica sand. Monitor wells MW-3 through MW-8 construction consisted of 2.375-inch outside diameter (2.048-inch inside diameter) Schedule 40 PVC screen and 2.0-inch blank riser casing, with 20/40 Colorado silica sand pack. For all wells, MW-2 through MW-8, the screened interval extended 15 feet across the water table. A

bentonite seal was placed above the sand pack, and concrete grout with approximately 5 percent bentonite was poured from the top of the bentonite plug up to within 0.5 feet of ground surface. A steel surface-grade well vault, enclosed with a shroud of concrete, was installed on the well to prevent unauthorized access and damage. Monitor well schematics are presented on the Soil Boring Logs in Appendix C.

4.2.6 Professional Survey

The location and elevation of the top of each well casing was surveyed to the nearest 0.01 foot with reference to mean sea level by professional surveyors in order to accurately determine the local groundwater depth and flow direction beneath the site. Each well was tied to an existing USGS benchmark.

4.2.7 Monitor Well Development

On May 3 and August 21, 2013, each well was developed in order to remove fine grained sediments and to increase hydraulic conductivity through the well screen. Each well was developed by a combination of surging and bailing techniques. Groundwater purged from the wells during development and sampling was placed into the separator waste tank on the location for proper disposal along with the facility's produced water.

4.3 SVE Pilot Study Tests, October and November 2013

In order to evaluate the potential for BTEX in groundwater to partition from a dissolved phase to a vapor phase by applying a low vacuum to the vadose zone, SVE pilot tests were completed in October and November 2013. These tests were short-term, with a 24 hour duration in October and a 48 hour duration in November.

4.3.1 Pilot Study Test Procedures

For both pilot tests, a ½ horse GAST regenerative blower was used to create the applied vacuum. The blower has a 1.25 inch suction and was connected to the test well(s) by reinforced rubber hose. During both studies, samples were collected from the vacuum pump discharge into Tedlar air sample bags. Air samples were submitted to Hall for analysis of the following parameters:

- BTEX per USEPA Method 8021B; and
- TPH (GRO) per USEPA Method 8015D.

October 2013

During the October 2013 test, a vacuum was applied to MW-3 while vacuum response monitoring was conducted in MW-1, MW-4, MW-5, and MW-7. During the first 6 hours of the test, the applied vacuum was increased hourly from a beginning pressure of 5 in-H_2O up to 10 in-H_2O, which based on the manufacturer's pump performance curve, and air flow from the

well was approximately 10 cubic feet per minute (CFM) . The vacuum was not increased beyond 10 in-H_2O to avoid the possibility of raising the groundwater within the formation in the vicinity of MW-3. During the daylight hours of the test, OVM measurements of the vacuum discharge were recorded, and a low-range magnehelic gauge was used to measure vacuum response in surrounding wells.

November 2013

During the November 2013 test, the vacuum pump suction was manifolded to allow a vacuum to be simultaneously and equally applied to MW-1, MW-3, and MW-4, while vacuum response monitoring was conducted in MW-5 and MW-7. An applied pressure of 10 in-H_2O was maintained for the entire 48 hour study. About every three hours, during the daylight hours of the test, OVM measurements of the vacuum discharge were recorded, and a low-range magnehelic gauge was used to measure vacuum response in surrounding wells.

Additionally, groundwater samples were collected from MW-1, MW-3, and MW-4 prior to starting the study and at the conclusion of the pilot study. The purpose of the sampling was to evaluate percent concentration change for BTEX as a result of the 48 hour test. Samples were submitted to Hall for analysis of:

- BTEX per USEPA Method 8021B

Pilot study results are discussed in Section 5.2.

4.4 Groundwater Monitoring and Sampling

A groundwater sample was collected from SB-1/MW-2 during drilling by AES on April 29, 2013, for initial evaluation of dissolved contaminant migration across the site. Groundwater monitoring and sampling was then conducted by AES in May 2013 following the installation of MW-2, MW-3, and MW-4. Quarterly sampling was conducted on all site wells in August 2013 subsequent to the installation of MW-5, MW-6, MW-7 and MW-8. In November 2013, quarterly groundwater sampling was conducted concurrent with pilot testing activities and was then conducted again in February 2014.

During each groundwater sampling event, the monitor wells were purged a minimum of three well volumes or until the well was dry, and a groundwater sample was collected from each well with a new disposable bailer equipped with a low-flow release valve. Purged water was disposed of in the on-site waste water tank.

4.4.1 Groundwater Measurements and Hydraulic Gradient

Prior to groundwater sample collection, depth to groundwater in each well was measured with a Keck Interface Level Indicator with an accuracy of 0.01 ft. Depth to groundwater measurements and corresponding groundwater elevations were recorded on Water Sample Collection forms in order to assist with calculating the magnitude and direction of hydraulic gradient.

4.4.2 Water Quality Measurements

Purging data, including pH, temperature, conductivity, oxidation-reduction potential (ORP), and dissolved oxygen (DO), were measured with a YSI water quality meter and documented on Water Sample Collection forms until the water quality measurements indicated that the well was stabilized. Purged water volume and sample depth were also recorded. All sampling equipment was thoroughly decontaminated between uses.

4.4.3 Groundwater Laboratory Analyses

With the exception of the groundwater samples collected from MW-1 on March 14, 2013, and SB-1/MW-2 on April 29, 2013 (which were analyzed at Envirotech Laboratory), all groundwater samples were submitted to Hall in Albuquerque, New Mexico, for analysis of the following parameters:

- BTEX per USEPA Method 8021B.

Once collected, all samples were preserved in laboratory-supplied containers and stored in an insulated cooler containing ice. Samples were shipped by Hall personnel in insulated coolers containing ice at less than 6°C via bus to the analytical laboratory.

5.0 Investigation Results

5.1 Soil Results

5.1.1 Soil Lithology

Fill soils from the initial excavation at the location appeared to consist of clayey sand with varying amounts of gravel, cobbles, and boulders. Native soils consisted of poorly graded sand with varying amounts of clay to clayey sand. A lens of clayey sand to lean clay was observed in near the transition between the vadose zone and the fluctuating water table in each boring. Groundwater was encountered in the borings at depths ranging from approximately 37 feet to 40 feet bgs while drilling. Soil cross sections are included on Figure 3, and Soil Boring Logs are presented in Appendix C.

5.1.2 Field Screening Results

Results from Envirotech's work in March 2013, showed VOC concentrations for MW-1 of 0.0 ppm for all the samples, except from 40 to 45 feet bgs (1,637 ppm) and 45 to 46 feet bgs (110 ppm).

During the soil boring installation by AES, soil field screening results showed VOC concentrations for samples from SB-4 through SB-7 ranged from 1.6 ppm at 35 to 36.5 feet in SB-4 and SB-5 up to 393 ppm at 38 to 39 feet in SB-6. Soil field screening results are presented in Table 1 and also included on the Soil Boring Logs.

5.1.3 Soil Laboratory Analytical Results

Results from Envirotech's work in March 2013, reported benzene and total BTEX concentrations below the applicable NMOCD action levels in MW-1 at 40 to 45 feet bgs. Benzene concentration in MW-1 at 40 to 45 feet bgs was reported below the laboratory detection limit of 0.50 mg/kg and total BTEX concentrations were reported as 14.6 mg/kg. TPH (GRO/DRO) concentration was reported below the NMOCD action level with 99.6 mg/kg in MW-1 at 40 to 45 feet bgs.

AES soil analytical results for benzene, total BTEX, and TPH concentrations were below the laboratory detection limits in all the soil samples except for SB-2 and SB-3. Benzene concentrations were below the NMOCD action level of 10 mg/kg in SB-2 (9.0 mg/kg) and SB-3 (2.1 mg/kg). Total BTEX concentrations exceeded the NMOCD action level of 50 mg/kg in SB-2 (187 mg/kg) and SB-3 (99 mg/kg). Additionally, TPH (GRO/DRO) concentrations exceeded the NMOCD action level of 100 mg/kg with 2,174 mg/kg in SB-2 and 1,380 mg/kg in SB-3. Soil analytical results are presented in Table 1 and on Figure 3. Laboratory analytical reports are included in Appendix D.

5.2 SVE Pilot Study Test Results

Observations and data from both pilot studies indicate that BTEX in groundwater at this site will partition from a dissolved phase to a vapor phase under low-pressure vacuum conditions. However, due to the clayey lithology, no radius of vacuum response was measured between wells, which indicates that remediation by low-pressure vacuum would most likely not be technically feasible or cost effective. Since OVM values were all less than 100 ppm, and no vacuum response was observed, only the well gas sampling results and the pre- and post-pilot test groundwater sampling results (completed for November 2013 test only) are presented here.

MW-4 Well Gas, October 2013

Date	Benzene (ppm-v)	Toluene (ppm-v)	Ethylbenzene (ppm-v)	Xylene (ppm-v)	GRO (ppm-v)	Notes
10/10/13	0.17	0.22	<0.023	0.063	1.2	Start of study
10/11/13	0.17	0.35	0.036	0.14	6.5	End of study

MW-1, MW-3, and MW-4 Combined Well Gas, November 2013

Date	Benzene (ppm-v)	Toluene (ppm-v)	Ethylbenzene (ppm-v)	Xylene (ppm-v)	GRO (ppm-v)	Notes
11/14/13	0.05	0.12	0.08	0.49	NA*	End of study

*Not analyzed

Percent Groundwater Concentration Changes in BTEX, November Pilot Study

Well ID	Event	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylene (µg/L)
MW-1	Baseline Pre SVE Pilot Study	11/11/13	5	92	360	3,200
MW-1	Post 48 Hour SVE Pilot Study	11/14/13	5	85	220	2,300
MW-1	***% Concentration Change***		***0***	***-8%***	***-39%***	***-28%***
MW-3	Baseline Pre SVE Pilot Study	11/11/13	2,300	320	170	910
MW-3	Post 48 Hour SVE Pilot Study	11/14/13	1,500	280	54	550
MW-3	***% Concentration Change***		***-35%***	***-13%***	***-68%***	***-40%***
MW-4	Baseline Pre SVE Pilot Study	11/11/13	89	87	8.8	68
MW-4	Post 48 Hour SVE Pilot Study	11/14/13	5	140	350	3,500
MW-4	***% Concentration Change***		***-94%***	***+61%***	***+3,877%***	***+5,047%***

Note that increases in toluene, ethylbenzene, and xylene concentrations observed in MW-4 are likely indicative of a residual contaminant mass that was drawn to the well during active vacuum operations.

5.3 Groundwater Results

5.3.1 Groundwater Elevations and Gradient

During the groundwater sampling events conducted at the site in May, August and November 2013 and February 2014, depths to groundwater generally ranged from between 35 feet to 38.5 feet below top of casing (TOC), and groundwater elevations ranged from 5413 feet to 5418 feet above mean sea level (AMSL) across the site.

In May 2013, groundwater elevations in MW-1 through MW-4 ranged from 5413.51 feet AMSL in MW-3 up to 5413.62 feet AMSL in MW-1. By August 2013, groundwater elevations increased up to about 5418 feet AMSL in all wells, including the newly installed MW-5 through MW-8. Groundwater elevations peaked at about 5418.5 feet AMSL at the site in November and decreased slightly by February 2014, when groundwater elevations ranged from 5415.23 feet AMSL in MW-6 up to 5415.39 feet AMSL in MW-1. Based on February 2014 data, groundwater gradient was determined to be 0.001 ft/ft from east to west.

Depth to groundwater measurements and groundwater elevations are included in Table 2, and groundwater elevations and contours for February 2014 are presented in Figure 4. Groundwater elevations over time for MW-1 through MW-4 and MW-7 are included as Graphs 1 through 5, respectively.

5.3.2 Groundwater Quality Field Measurements

Groundwater quality readings for all of the sampling events indicate that groundwater at the site is of a normal pH range, between 6 and 8. Specific conductivity measurements show relatively low to moderate values, between 0.5 mS and 1.5 mS, which indicate dissolved solids are most likely not present in significantly high concentrations.

Based on February 2014 data, groundwater temperature ranged from 13.24°C in MW-6 to 14.85°C in MW-2, and conductivity ranged from 0.537 mS in MW-2 up to 0.993 mS in MW-3. Readings for pH ranged from 7.17 in MW-3 up to 8.01 in MW-8. Groundwater quality data are summarized in Table 2, and Water Sample Collection forms are presented in Appendix E.

5.3.3 Groundwater Laboratory Analytical Results

Groundwater analytical results from sampling of MW-1, conducted by Envirotech in March 2013, showed benzene and xylene concentrations exceeding applicable WQCC standards with 23.8 µg/L and 3,290 µg/L, respectively. Toluene and ethylbenzene concentrations in MW-1 were below applicable WQCC standards 289 µg/L and 401 µg/L, respectively.

Groundwater analytical results from the sampling events conducted to date by AES, including in association with pilot studies, have shown that BTEX constituents are present in MW-1 (primarily xylene), MW-3, MW-4, and MW-7:

- **MW-1:** Benzene concentrations in each sampling event have remained below laboratory detection limits; toluene and ethylbenzene concentrations have been below applicable WQCC standards; and xylene concentrations have ranged from 2,300 µg/L up to 4,100 µg/L. In February 2014, BTEX concentrations were reported as <5.0 µg/L benzene, 42 µg/L toluene, 470 µg/L ethylbenzene, and 4,100 µg/L xylene.

- **MW-3:** Significant BTEX concentrations have been reported in each sampling event, with the highest BTEX concentrations reported in August 2013 (18,000 µg/L benzene, 27,000 µg/L toluene, 1,300 µg/L ethylbenzene, and 12,000 µg/L xylene). After the pilot studies were conducted, BTEX concentrations decreased to 1,500 µg/L benzene, 280 µg/L toluene, 54 µg/L ethylbenzene, and 550 µg/L xylene. In February 2014, BTEX concentrations showed some rebound with concentrations reported at 9,100 µg/L benzene, 8,800 µg/L toluene, 670 µg/L ethylbenzene, and 5,300 µg/L xylene.

- **MW-4:** Significant BTEX concentrations were reported in each sampling event, with the highest concentrations reported in August 2013, with 15,000 µg/L benzene, 29,000 µg/L toluene (May 2013), 1,200 µg/L ethylbenzene, and 11,000 µg/L xylene). After the pilot studies were conducted, BTEX concentrations decreased to <5 µg/L benzene, 140 µg/L toluene, 350 µg/L ethylbenzene, and 3,500 µg/L xylene. However, in February 2014, BTEX concentrations showed some rebound, with concentrations reported at 1,300 µg/L benzene, 1,100 µg/L toluene, and 1,300 µg/L xylene.

- **MW-7:** Dissolved phase BTEX concentrations have increased in each sampling event, with benzene just slightly over the WQCC standard and ethylbenzene remaining below standard. Toluene and xylene concentrations in February 2014 were reported above the WQCC standards with 870 µg/L and 1600 µg/L, respectively.

Four wells, including MW-2, MW-5, MW-6 and MW-8, have BTEX concentrations that have remained either below laboratory detection limits or well below applicable WQCC standards.

Tabulated groundwater analytical results are presented in Table 3 and on Figure 5. Dissolved phase benzene, toluene and xylene contours are presented in Figures 6, 7, and 8, respectively. Graphs 1 through 5 include groundwater contaminant concentrations and groundwater elevations for MW-1 through MW-4 and MW-7, respectively. Groundwater laboratory analytical reports are presented in Appendix D.

6.0 Conclusions and Recommendations

AES installed a total of seven soil borings (SB-1 through SB-7) which were completed as a 1-inch diameter monitor well (MW-2) and 2-inch diameter wells (MW-3 through MW-8) in April, May, and August 2013, in accordance with the workplan submitted in April 2013 with updates in June 2013. Soils were observed to consist primarily of clayey sand fill and native poorly graded sand with varying amounts of clay. A lens of clayey sand to lean clay was observed in each of the wells near the transition between the vadose zone and fluctuating groundwater table. Groundwater was encountered at depths ranging from approximately 37 feet to 40 feet bgs during drilling. The groundwater gradient is generally flat at 0.001 ft/ft from east to west. Gradients are expected to vary throughout the year due to the seasonal operation of unlined irrigation ditches and watering of alfalfa fields adjacent to the site.

Soil field screening results showed VOC concentrations below the NMOCD action level of 100 ppm in the soil samples from SB-4 through SB-7, except for SB-6 at 38 to 39.5 feet (393 ppm). Soil laboratory analytical results were below detection limits or applicable NMOCD action levels in all samples, except for SB-2 at 40 to 41 feet with 187 mg/kg total BTEX and 2,174 mg/kg TPH (GRO/DRO) and in SB-3 with 99 mg/kg total BTEX and 1,380 mg/kg TPH (GRO/DRO).

Laboratory results confirmed dissolved phase BTEX concentrations above WQCC standard in four monitor wells, including MW-1 (primarily xylene), MW-3, MW-4 and MW-7. During the February 2014 monitoring event, the highest contaminant concentrations were reported in MW-3 with 9,100 µg/L benzene, 8,800 µg/L toluene, and 670 µg/L ethylbenzene, and 5,300 µg/L xylene. Dissolved phase toluene, ethylbenzene, and xylenes concentrations were below WQCC standards in the remaining monitor wells (MW-2 MW-5, MW-6, and MW-8). Based on the installation of the additional site wells, it appears that the dissolved phase downgradient extent of contaminant impact has been sufficiently defined to begin mitigation planning. Any additional investigative wells, if needed, will be installed as part of mitigation efforts.

Two separate short-term SVE pilot studies were completed in October and November 2013. Both studies utilized a maximum applied vacuum of 10 in-H_2O to select wells. Based on pilot study observations and data, and due to the site's clayey lithology, low-vacuum SVE remediation will not likely provide a technically feasible or cost effective method of contaminant mitigation at this site. However, based on the same observations and data, AES recommends that Energen complete the following mitigation tasks:

- Install one well on the north side of the condensate tank, within the secondary containment;
- Evaluate remediation alternatives, including the use of high-vacuum multiphase extraction (MPE);

- Prepare and submit a Mitigation Plan to NMOCD; and
- Continue with quarterly groundwater monitoring and sampling.

7.0 Certification

On behalf of Energen Resources Corporation, Animas Environmental Services, LLC has prepared this site investigation report associated with a condensate tank release that was discovered at the Julander Federal #1E on January 14, 2013. I, the undersigned, am personally familiar with the information submitted in this report and attest that it is true and complete to the best of my knowledge.

Respectfully Submitted,

Heather M. Woods, P.G.
Project Manager

Ross Kennemer
Principal

Elizabeth McNally, P.E.

8.0 References

American Society for Testing and Materials (ASTM) International. *ASTM E 1903-11 Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process*, ASTM, 2012

Animas Environmental Services, LLC. 2012. *Groundwater Investigation Work Plan, Julander Federal #1E, San Juan County, New Mexico,* April 18, 2013.

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USEPA. 2001. Environmental Investigations, Standard Operating Procedures, and Quality Assurance Manual (EISOPQAM), November 2001.

TABLE 1. SUMMARY OF SOIL FIELD AND LABORATORY ANALYTICAL RESULTS
Energen Resources Julander Federal #1E
San Juan County, New Mexico

Sample ID	Sample Date	Depth (ft bgs)	Analytical Method	OVM (ppm)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH (GRO) (mg/kg)	TPH (DRO) (mg/kg)
NMOCD Action Levels				100	10	50	100	
MW-1*	11-Mar-13	40-45	8021/8015	**1,637**	<0.50	14.6	**78.7**	**20.9**
SB-1/MW-2	29-Apr-13	37.5-39	8021/8015	*NM*	<0.047	<0.238	<4.7	<10
SB-2/MW-4	1-May-13	40-41	8021/8015	*NM*	9.0	**187**	**2,100**	**74**
SB-3/MW-3	1-May-13	39-40	8021/8015	*NM*	2.1	**99**	**1,300**	**80**
SB-4/MW-5	15-Aug-13	35-36.5	8021/8015	1.6	<0.047	<0.235	<4.7	<10
SB-5/MW-6	15-Aug-13	35-36.5	8021/8015	1.6	<0.047	<0.235	<4.7	<10
SB-6/MW-7	14-Aug-13	35-36.5	8021/8015	1.7	<0.048	<0.240	<4.8	<10
SB-7/MW-8	16-Aug-13	35-36.5	8021/8015	4.0	<0.048	<0.240	<4.8	<9.9

Notes:

***Sample collected and analyzed by Envirotech, Inc.**

< - Analyte not detected above listed method limit

bgs - Below ground surface

NM - Not measured

TABLE 2. SUMMARY OF GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Energen Resources Julander Federal #1E
San Juan County, New Mexico

Well ID	Date Measured	Top of Casing Elevation (ft amsl)	Depth to Water (ft)	NAPL thickness (ft)	Water Level Elevation (ft amsl)	Corrected Water Level Elevation (ft amsl)	pH	Temp. (°C)	Specific Conduct. (mS)
MW-1	6-May-13	5455.49	41.87		5413.62		6.95	14.61	0.865
MW-1	23-Aug-13	5455.49	37.50		5417.99		6.86	15.10	1.661
MW-1	11-Nov-13	5455.49	36.97		5418.52		6.80	13.69	*NM*
MW-1	14-Nov-13	5455.49	36.63		5418.86		7.12	13.85	0.916
MW-1	10-Feb-14	5455.49	40.10		5415.39		7.54	14.10	0.818
MW-2	6-May-13	5452.05	38.48		5413.57		7.44	16.85	0.542
MW-2	23-Aug-13	5452.05	34.29		5417.76		7.19	16.34	1.124
MW-2	11-Nov-13	5452.05	33.35		5418.70		6.97	13.46	*NM*
MW-2	14-Nov-13	5452.05	*NM*		*NM*		*NM*		
MW-2	10-Feb-14	5452.05	36.71		5415.34		7.62	14.85	0.537
MW-3	6-May-13	5453.98	40.47		5413.51		6.70	14.80	1.575
MW-3	23-Aug-13	5453.98	36.16		5417.82		6.70	14.79	1.783
MW-3	11-Nov-13	5453.98	35.53		5418.45		6.52	13.73	*NM*
MW-3	14-Nov-13	5453.98	35.62	0.01	5418.36	5418.37	6.89	13.61	1.393
MW-3	10-Feb-14	5453.98	38.70		5415.28		7.17	14.19	0.993

TABLE 2. SUMMARY OF GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Energen Resources Julander Federal #1E
San Juan County, New Mexico

Well ID	Date Measured	Top of Casing Elevation (ft amsl)	Depth to Water (ft)	NAPL thickness (ft)	Water Level Elevation (ft amsl)	Corrected Water Level Elevation (ft amsl)	pH	Temp. (˚C)	Specific Conduct. (mS)
MW-4	6-May-13	5453.72	40.17		5413.55		7.03	14.94	1.123
MW-4	23-Aug-13	5453.72	35.93		5417.79		6.80	15.30	1.409
MW-4	11-Nov-13	5453.72	35.20		5418.52		6.74	14.52	*NM*
MW-4	14-Nov-13	5453.72	35.07		5418.65		7.14	14.36	0.936
MW-4	10-Feb-14	5453.72	38.41		5415.31		7.32	14.32	0.920
MW-5	23-Aug-13	5453.77	36.00		5417.77		6.82	15.14	1.686
MW-5	11-Nov-13	5453.77	35.44		5418.33		6.68	13.18	*NM*
MW-5	14-Nov-13	5453.77	*NM*		*NM*		*NM*		
MW-5	10-Feb-14	5453.77	38.45		5415.32		7.46	13.37	0.908
MW-6	23-Aug-13	5452.29	34.56		5417.73		7.01	15.54	1.638
MW-6	11-Nov-13	5452.29	33.84		5418.45		6.79	13.16	*NM*
MW-6	14-Nov-13	5452.29	*NM*		*NM*		*NM*		
MW-6	10-Feb-14	5452.29	37.06		5415.23		7.38	13.24	0.922
MW-7	23-Aug-13	5454.98	37.11		5417.87		7.06	15.64	1.337
MW-7	11-Nov-13	5454.98	36.42		5418.56		6.89	14.40	*NM*
MW-7	14-Nov-13	5454.98	*NM*		*NM*		*NM*		
MW-7	10-Feb-14	5454.98	39.66		5415.32		7.50	14.45	0.698

TABLE 2. SUMMARY OF GROUNDWATER MEASUREMENTS AND WATER QUALITY DATA
Energen Resources Julander Federal #1E
San Juan County, New Mexico

Well ID	Date Measured	Top of Casing Elevation (ft amsl)	Depth to Water (ft)	NAPL thickness (ft)	Water Level Elevation (ft amsl)	Corrected Water Level Elevation (ft amsl)	pH	Temp. (°C)	Specific Conduct. (mS)
MW-8	23-Aug-13	5453.20	35.41		5417.79		7.29	16.13	1.261
MW-8	11-Nov-13	5453.20	34.31		5418.89		7.28	14.94	*NM*
MW-8	14-Nov-13	5453.20	*NM*		*NM*		*NM*		
MW-8	10-Feb-14	5453.20	37.86		5415.34		8.01	14.51	0.552

Note: **NM - Not measured**

TABLE 3. SUMMARY OF GROUNDWATER LABORATORY ANALYTICAL RESULTS
Energen Resources Julander Federal #1E
San Juan County, New Mexico

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylene (µg/L)
Sample Method		EPA Method 8021B			
WQCC Standards		10	750	750	620
MW-1*	14-Mar-13	**24**	289	401	**3,290**
MW-1	6-May-13	<10	77	470	**3,900**
MW-1	23-Aug-13	<10	110	470	**4,000**
MW-1	11-Nov-13	<5.0	92	360	**3,200**
MW-1	14-Nov-13	<10	85	220	**2,300**
MW-1	10-Feb-14	<5.0	42	470	**4,100**
MW-2**	29-Apr-13	<1.0	<1.0	<1.0	12
MW-2	6-May-13	6.8	40	2.7	25
MW-2	23-Aug-13	<1.0	<1.0	<1.0	<2.0
MW-2	11-Nov-13	<1.0	<1.0	<1.0	<2.0
MW-2	14-Nov-13	*NS*			
MW-2	10-Feb-14	<1.0	<1.0	<1.0	<2.0
MW-3	6-May-13	**16,000**	**27,000**	**1,000**	**9,500**
MW-3	23-Aug-13	**18,000**	**27,000**	**1,300**	**12,000**
MW-3	11-Nov-13	**2,300**	320	170	**910**
MW-3	14-Nov-13	**1,500**	280	54	550
MW-3	10-Feb-14	**9,100**	**8,800**	670	**5,300**
MW-4	6-May-13	**8,500**	**29,000**	**1,100**	**10,000**
MW-4	23-Aug-13	**15,000**	**28,000**	**1,200**	**11,000**
MW-4	11-Oct-13	**9,300**	**16,000**	**720**	**6,800**
MW-4	11-Nov-13	**89**	87	8.8	68
MW-4	14-Nov-13	<5.0	140	350	**3,500**
MW-4	10-Feb-14	**1,300**	**1,100**	150	**1,300**
MW-5	23-Aug-13	5.3	<2.0	<2.0	29
MW-5	11-Nov-13	<1.0	<1.0	<1.0	<2.0
MW-5	14-Nov-13	*NS*			
MW-5	10-Feb-14	1.1	<1.0	<1.0	110

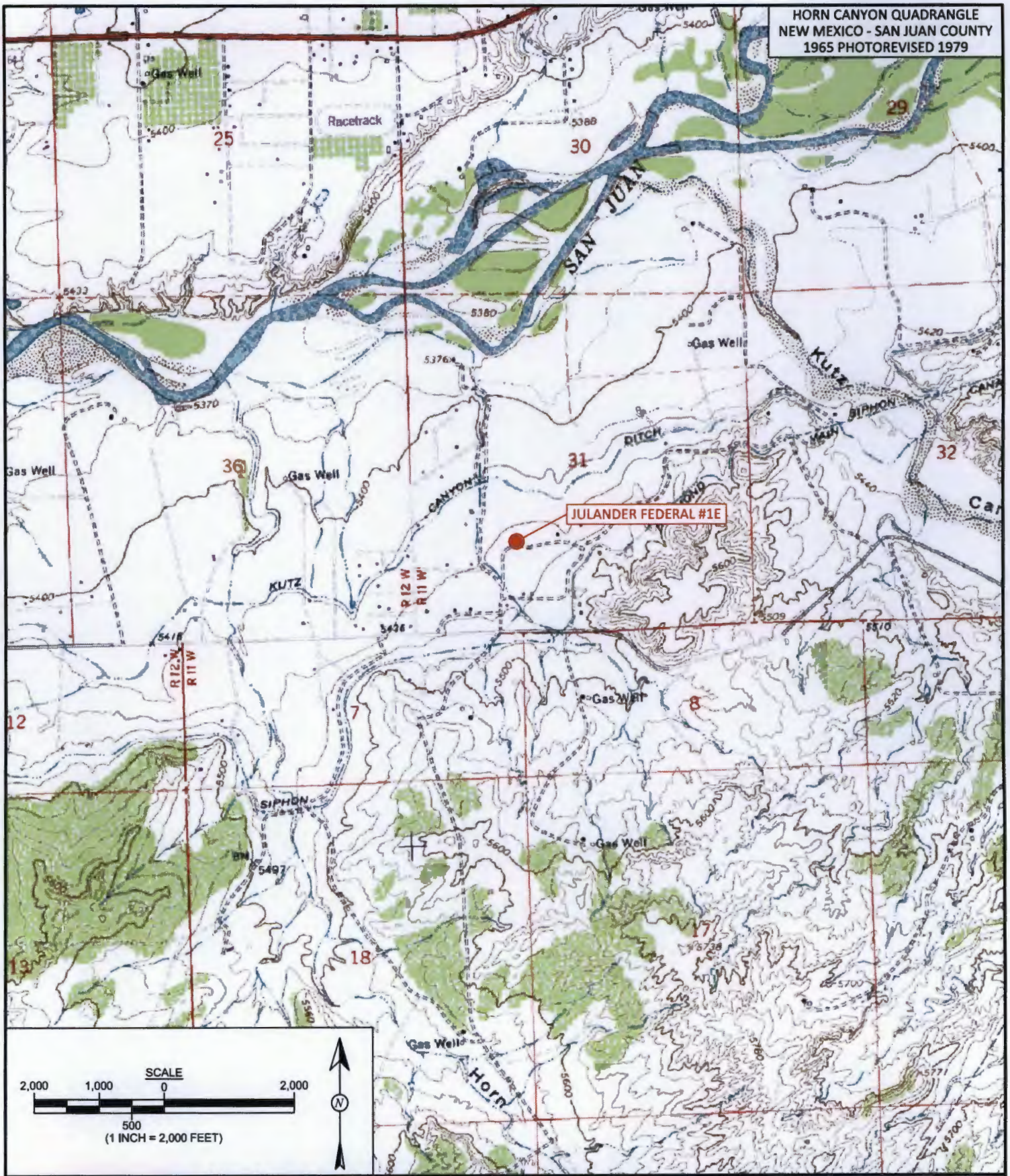
TABLE 3. SUMMARY OF GROUNDWATER LABORATORY ANALYTICAL RESULTS
Energen Resources Julander Federal #1E
San Juan County, New Mexico

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylene (µg/L)
Sample Method		EPA Method 8021B			
WQCC Standards		10	750	750	620
MW-6	23-Aug-13	<2.0	<2.0	<2.0	<4.0
MW-6	11-Nov-13	<1.0	<1.0	<1.0	<2.0
MW-6	14-Nov-13	NS			
MW-6	10-Feb-14	<1.0	<1.0	<1.0	<2.0
MW-7	23-Aug-13	<10	290	70	**630**
MW-7	11-Nov-13	8.6	500	160	**1,200**
MW-7	14-Nov-13	NS			
MW-7	10-Feb-14	**14**	**870**	200	**1,600**
MW-8	23-Aug-13	<2.0	<2.0	<2.0	<4.0
MW-8	11-Nov-13	<1.0	<1.0	<1.0	<2.0
MW-8	14-Nov-13	NS			
MW-8	10-Feb-14	<1.0	<1.0	<1.0	<2.0

Note: **NS - Not sampled**

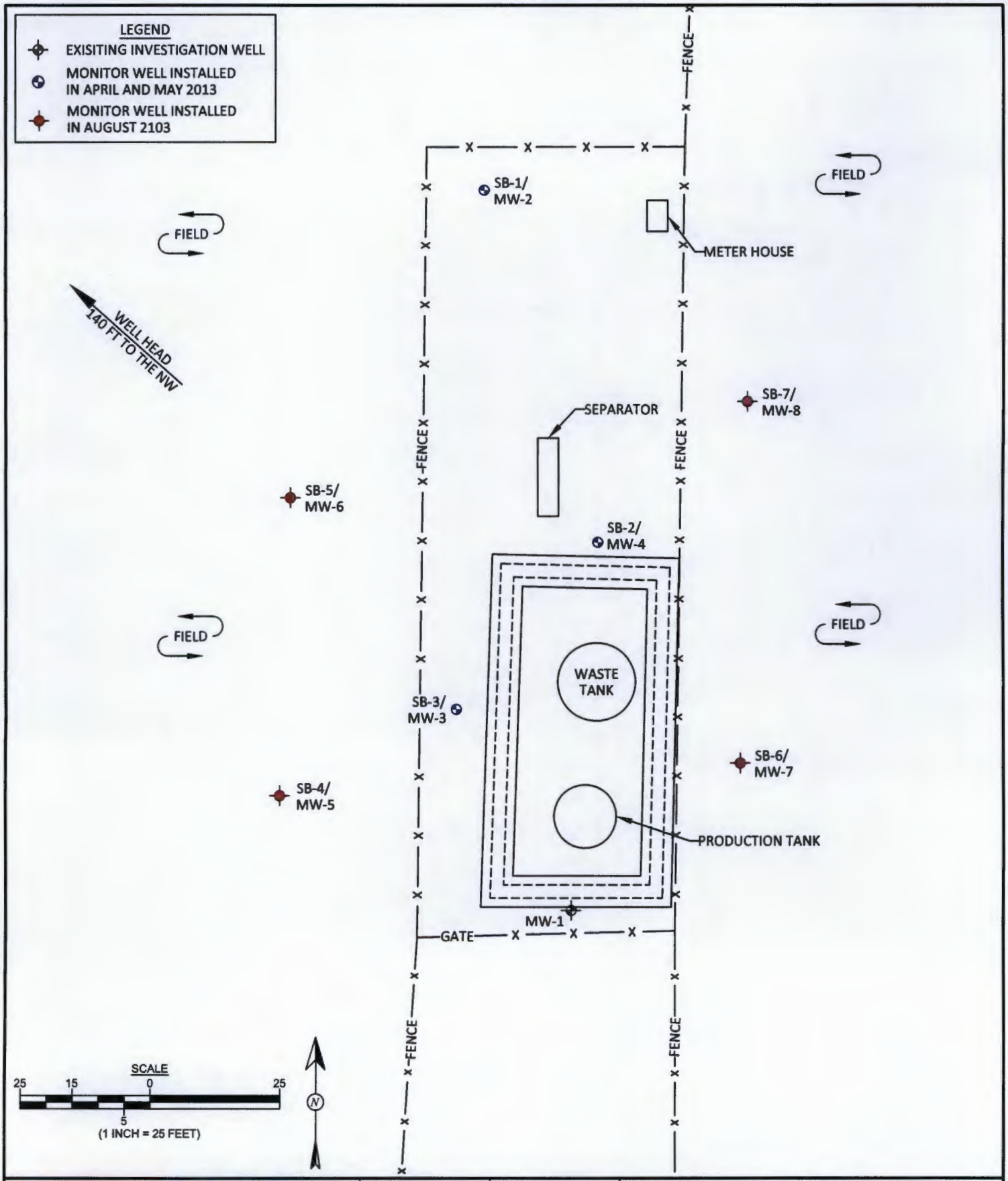
***Sample collected and analyzed by Envirotech, Inc.**

**** Sample collected by AES and analyzed at Envirotech, Inc.**



DRAWN BY: S. Glasses	**DATE DRAWN:** February 21, 2014	**FIGURE 1**
REVISIONS BY: C. Lameman	**DATE REVISED:** February 21, 2014	**TOPOGRAPHIC SITE LOCATION MAP**
CHECKED BY: D. Watson	**DATE CHECKED:** February 21, 2014	ENERGEN RESOURCES JULANDER FEDERAL #1E NE¼ SW¼, SECTION 31, T29N, R11W SAN JUAN COUNTY, NEW MEXICO N36.67936, W108.03514
APPROVED BY: E. McNally	**DATE APPROVED:** February 21, 2014	

AES
Animas Environmental Services, LLC

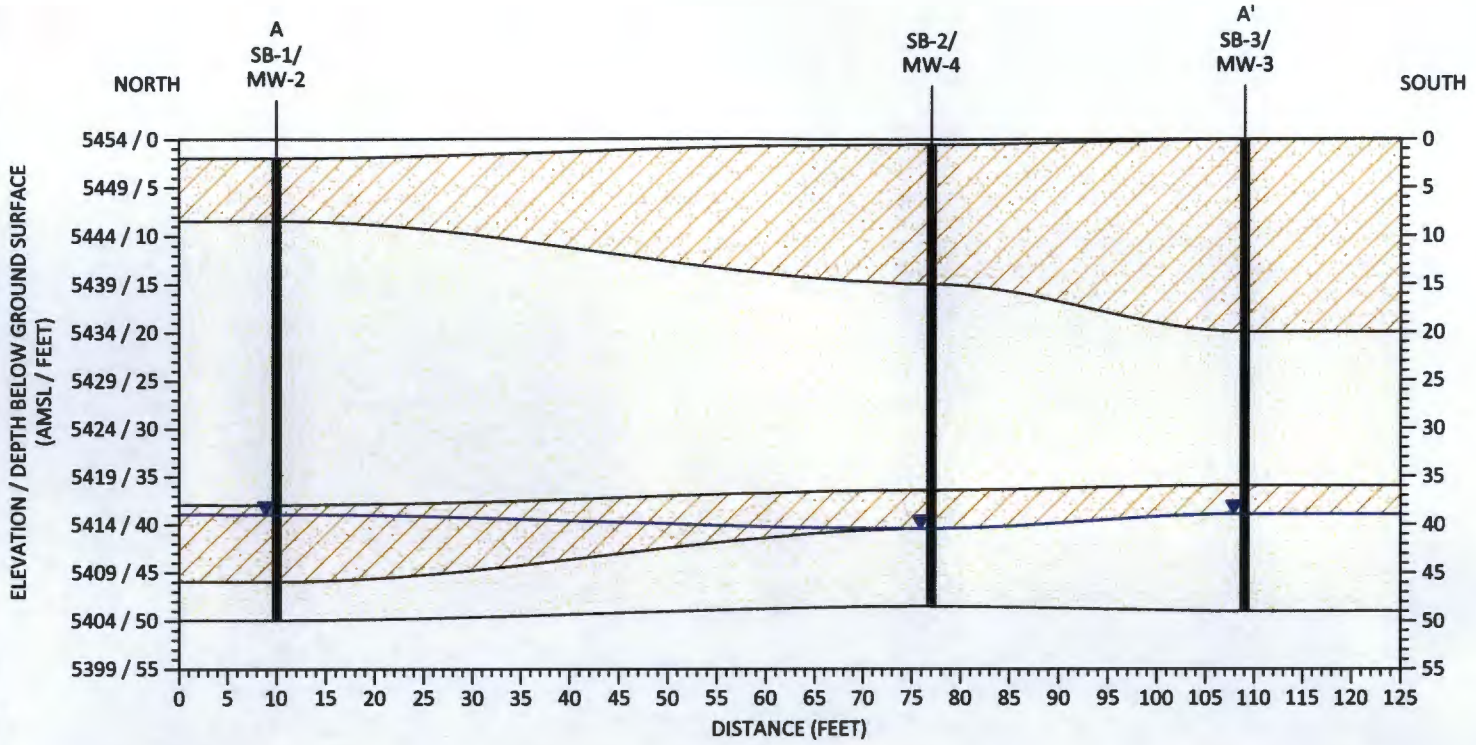


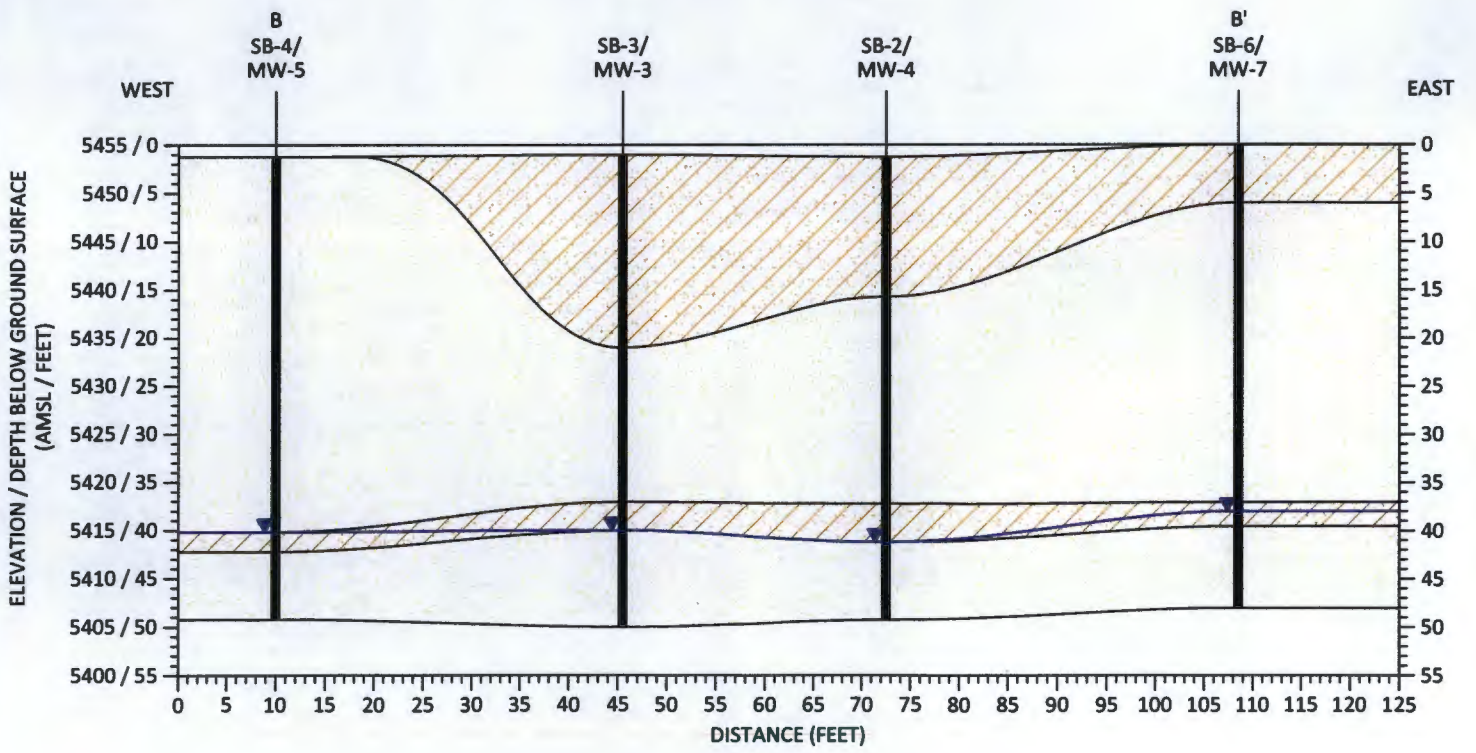
Animas Environmental Services, LLC	DRAWN BY: C. Lameman	DATE DRAWN: June 4, 2013	**FIGURE 2**
	REVISIONS BY: C. Lameman	DATE REVISED: March 17, 2014	**SOIL BORING AND MONITOR WELL LOCATIONS** ENERGEN RESOURCES JULANDER FEDERAL #1E NE¼ SW¼, SECTION 31, T29N, R11W SAN JUAN COUNTY, NEW MEXICO N36.67936, W108.03514
	CHECKED BY: H. Woods	DATE CHECKED: March 17, 2014	
	APPROVED BY: E. McNally	DATE APPROVED: March 17, 2014	

FIGURE 3

SOIL CROSS SECTIONS A - A' & B - B', LABORATORY ANALYTICAL RESULTS

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE¼ SW¼, SECTION 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514



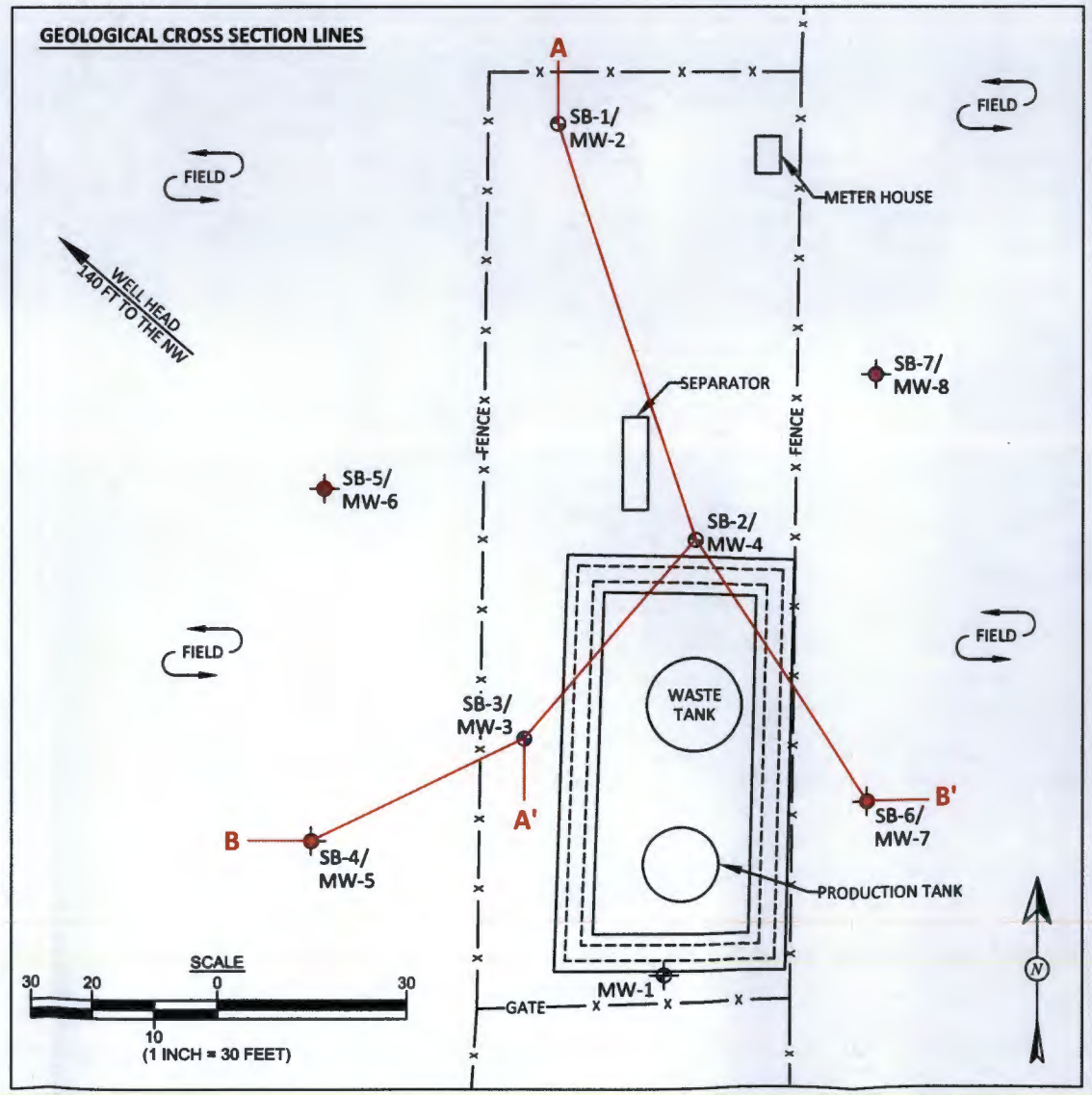


NOT TO SCALE

Soil Laboratory Analytical Results

Sample ID	*Date*	*Depth (ft bgs)*	*Benzene (mg/kg)*	*BTEX (mg/kg)*	*TPH - GRO (mg/kg)*	*TPH - DRO (mg/kg)*
NMOCD Action Levels			*10*	*50*	*100*	
SB-1/MW-2	4/29/13	37.5-39	<0.047	<0.238	<4.7	<10
SB-2/MW-4	5/1/13	40-41	9.0	**187**	**2,100**	**74**
SB-3/MW-3	5/1/13	39-40	2.1	99	**1,300**	**80**
SB-4/MW-5	8/15/13	35-36.5	<0.047	<0.235	<4.7	<10
SB-6/MW-7	8/14/13	35-36.5	<0.048	<0.240	<4.8	<9.9

ALL SAMPLES WERE ANALYZED PER EPA METHOD 8021B AND 8015D.

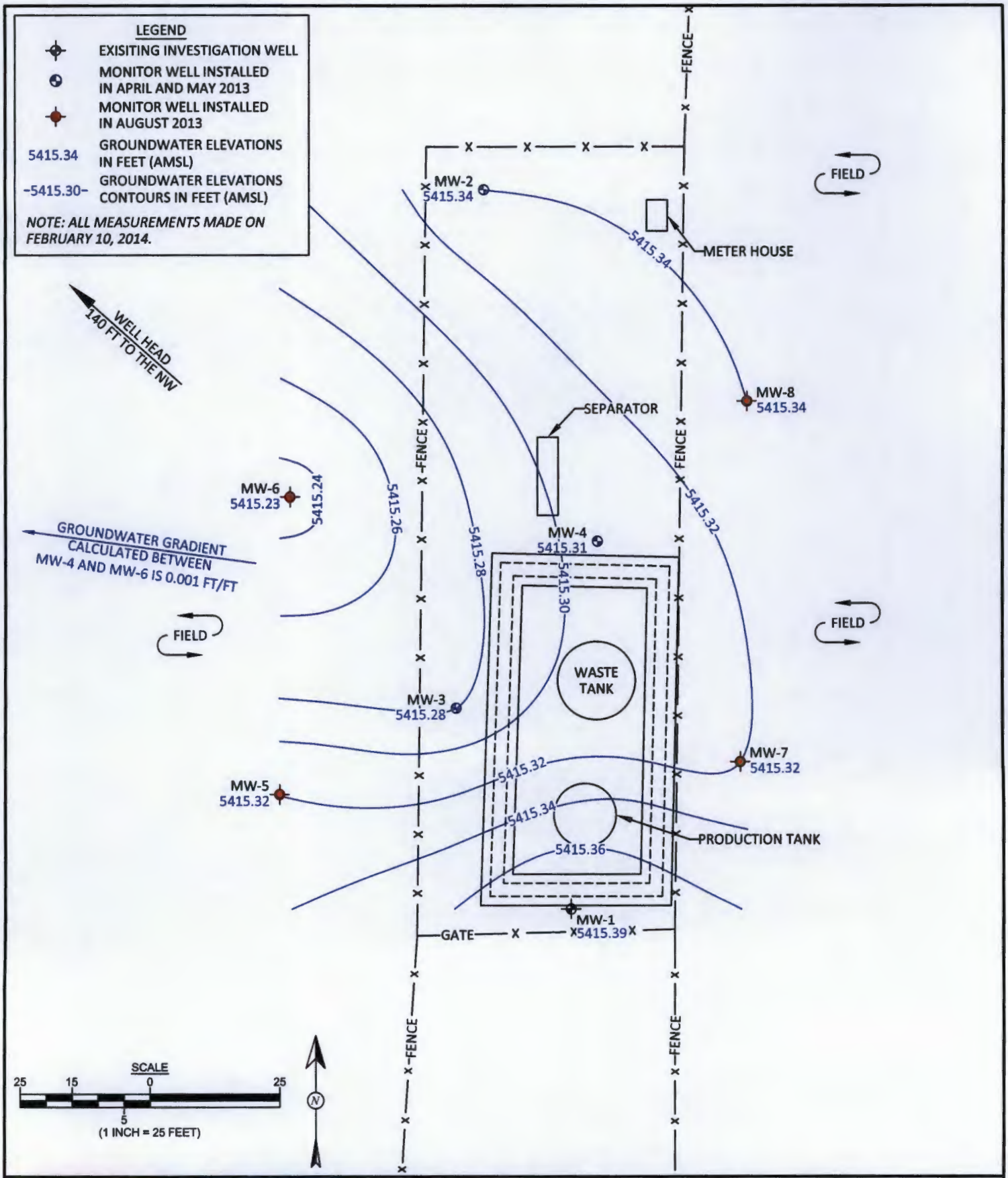


Animas Environmental Services, LLC

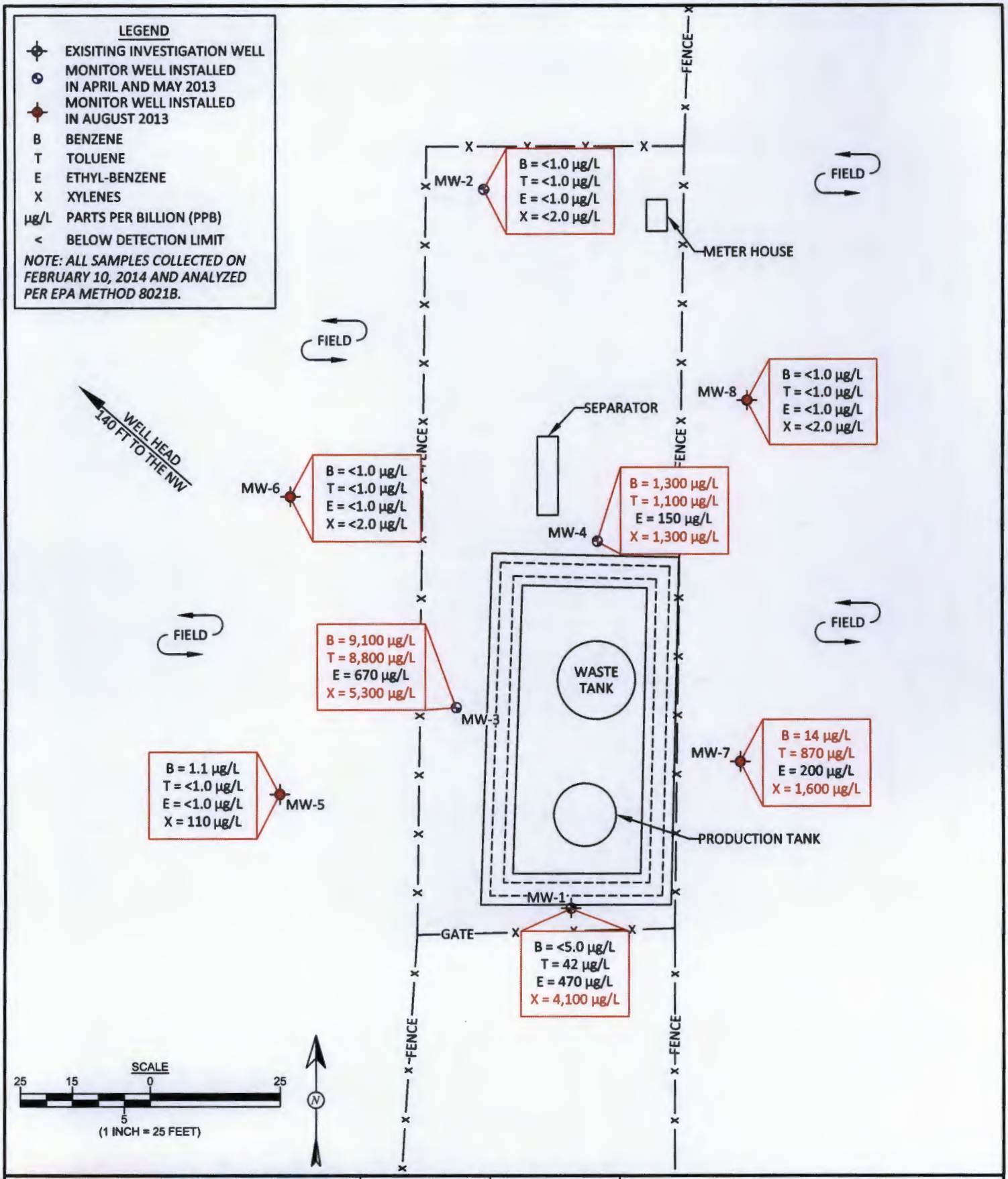
DRAWN BY: C. Lameman	**DATE DRAWN:** March 17, 2014
REVISIONS BY: C. Lameman	**DATE REVISED:** March 17, 2014
CHECKED BY: H. Woods	**DATE CHECKED:** March 17, 2014
APPROVED BY: E. McNally	**DATE APPROVED:** March 17, 2014

LEGEND

- GROUNDWATER ELEVATION
- CLAYEY SAND
- POORLY GRADED SAND

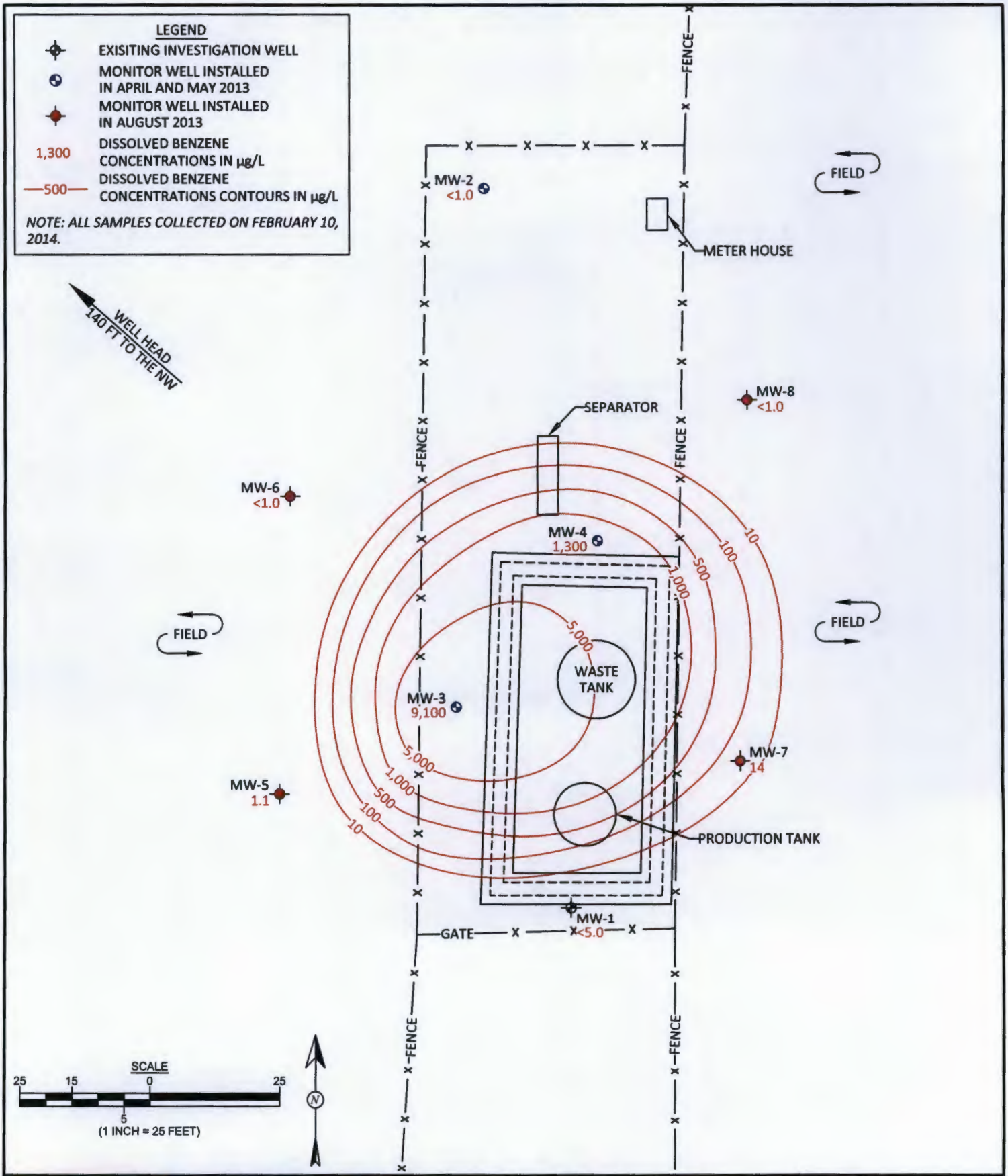


AES Animas Environmental Services, LLC	DRAWN BY: C. Lameman	DATE DRAWN: March 17, 2014	**FIGURE 4**
	REVISIONS BY: C. Lameman	DATE REVISED: March 17, 2014	**GROUNDWATER ELEVATION CONTOURS FEBRUARY 2014** ENERGEN RESOURCES JULANDER FEDERAL #1E NE¼ SW¼, SECTION 31, T29N, R11W SAN JUAN COUNTY, NEW MEXICO N36.67936, W108.03514
	CHECKED BY: H. Woods	DATE CHECKED: March 17, 2014	
	APPROVED BY: E. McNally	DATE APPROVED: March 17, 2014	



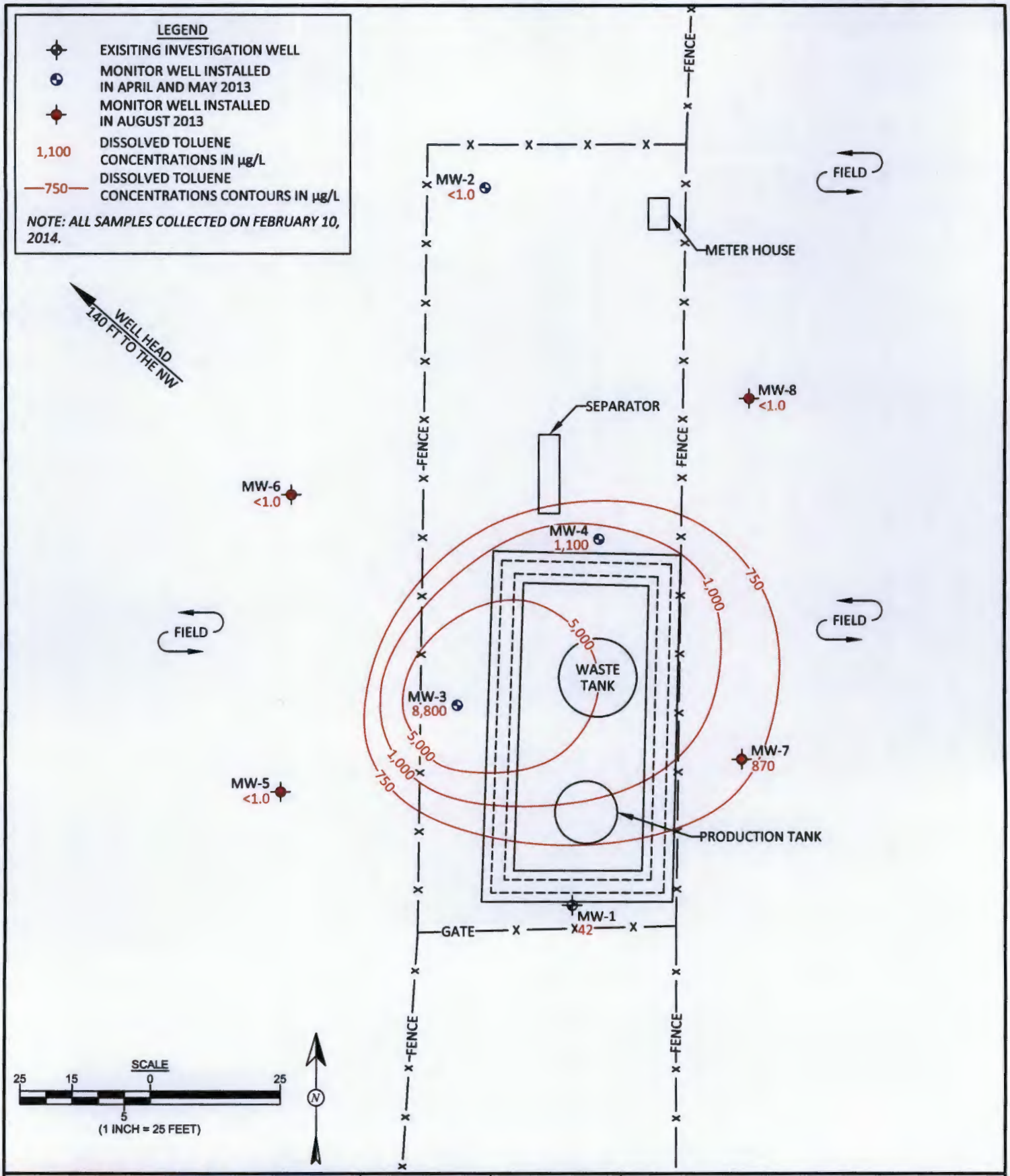
DRAWN BY: C. Lameman	DATE DRAWN: March 17, 2014	**FIGURE 5**
REVISIONS BY: C. Lameman	DATE REVISED: March 17, 2014	**GROUNDWATER CONTAMINANT CONCENTRATIONS, FEBRUARY 2014**
CHECKED BY: H. Woods	DATE CHECKED: March 17, 2014	ENERGEN RESOURCES
APPROVED BY: E. McNally	DATE APPROVED: March 17, 2014	JULANDER FEDERAL #1E NE¼ SW¼, SECTION 31, T29N, R11W SAN JUAN COUNTY, NEW MEXICO N36.67936, W108.03514

Animas Environmental Services, LLC



DRAWN BY: C. Lameman	DATE DRAWN: March 17, 2014	**FIGURE 6**
REVISIONS BY: C. Lameman	DATE REVISED: March 17, 2014	**DISSOLVED BENZENE CONCENTRATION CONTOURS, FEBRUARY 2014**
CHECKED BY: H. Woods	DATE CHECKED: March 17, 2014	ENERGEN RESOURCES
APPROVED BY: E. McNally	DATE APPROVED: March 17, 2014	JULANDER FEDERAL #1E NE¼ SW¼, SECTION 31, T29N, R11W SAN JUAN COUNTY, NEW MEXICO N36.67936, W108.03514

Animas Environmental Services, LLC



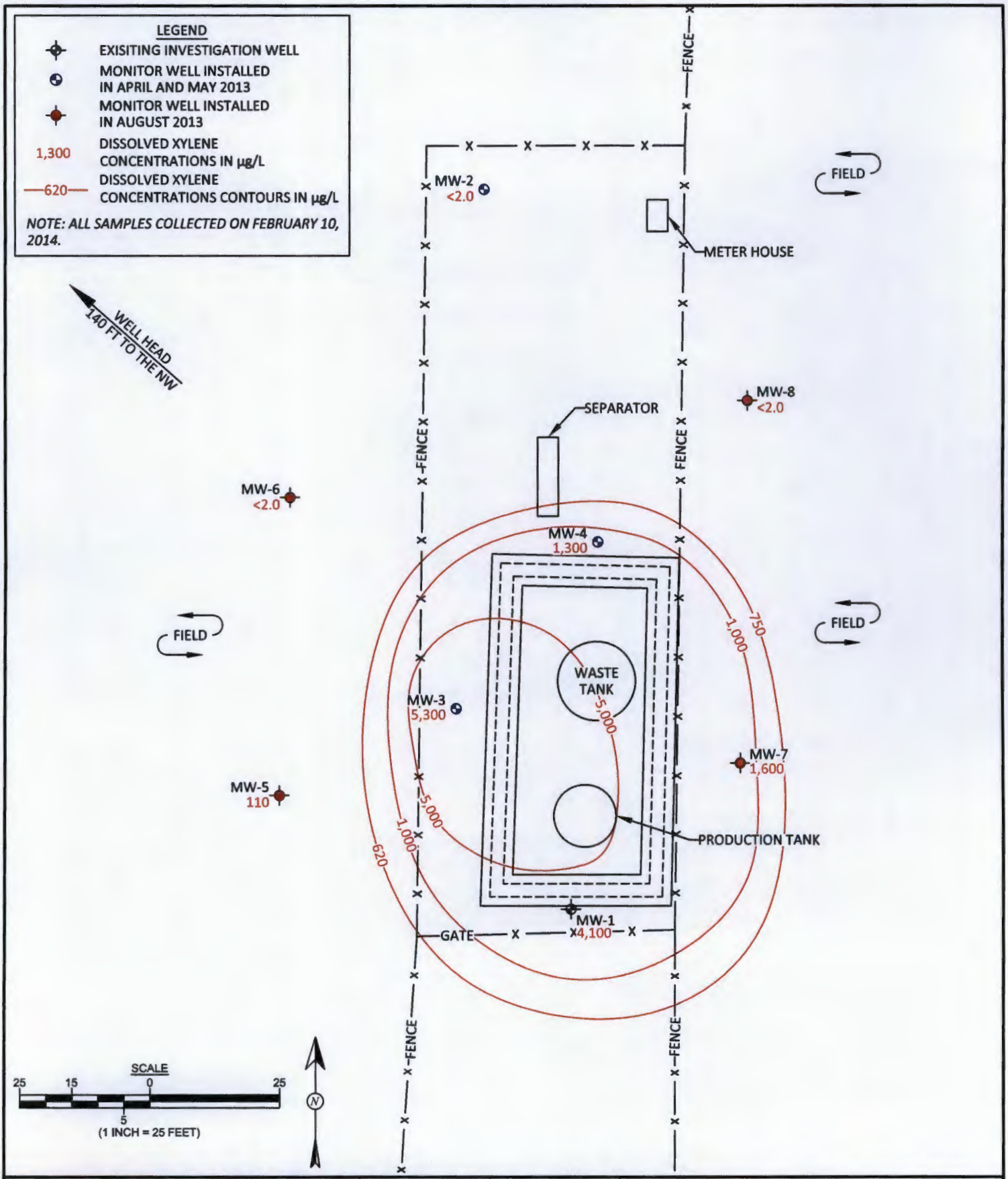
DRAWN BY: C. Lameman	DATE DRAWN: March 17, 2014
REVISIONS BY: C. Lameman	DATE REVISED: March 17, 2014
CHECKED BY: H. Woods	DATE CHECKED: March 17, 2014
APPROVED BY: E. McNally	DATE APPROVED: March 17, 2014

Animas Environmental Services, LLC

FIGURE 7

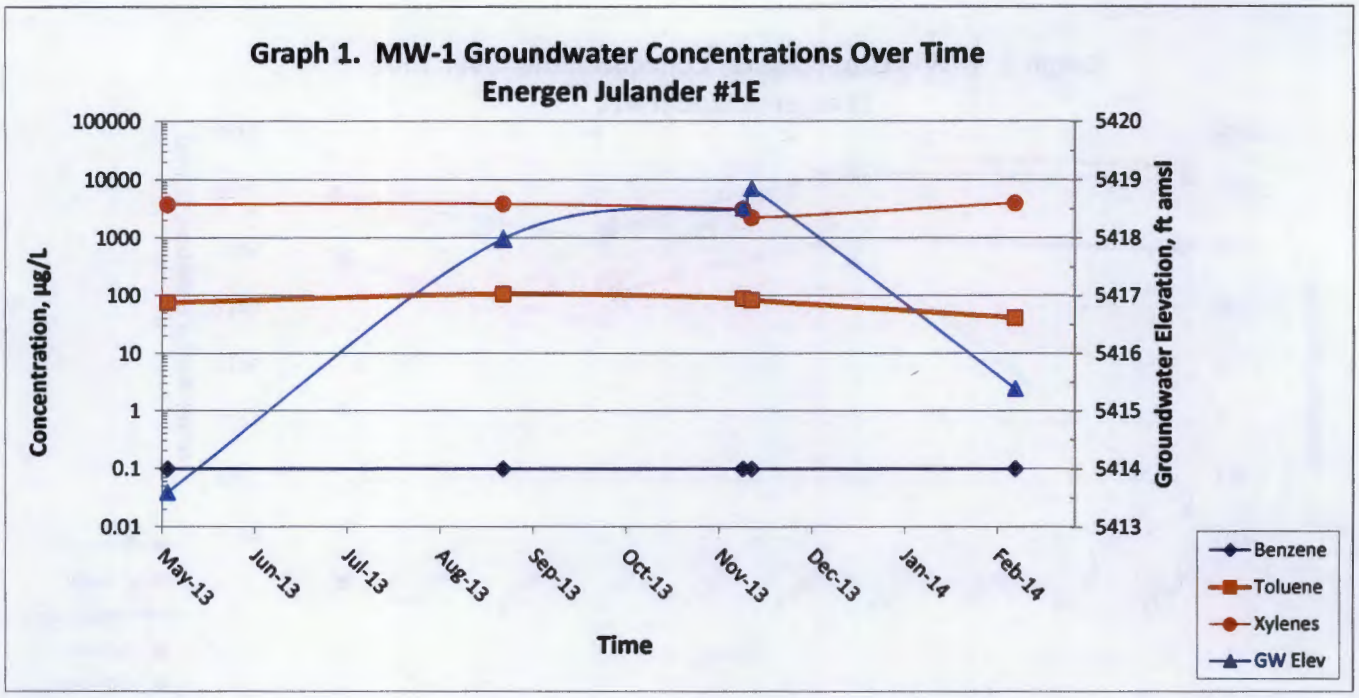
DISSOLVED TOLUENE CONCENTRATION CONTOURS, FEBRUARY 2014

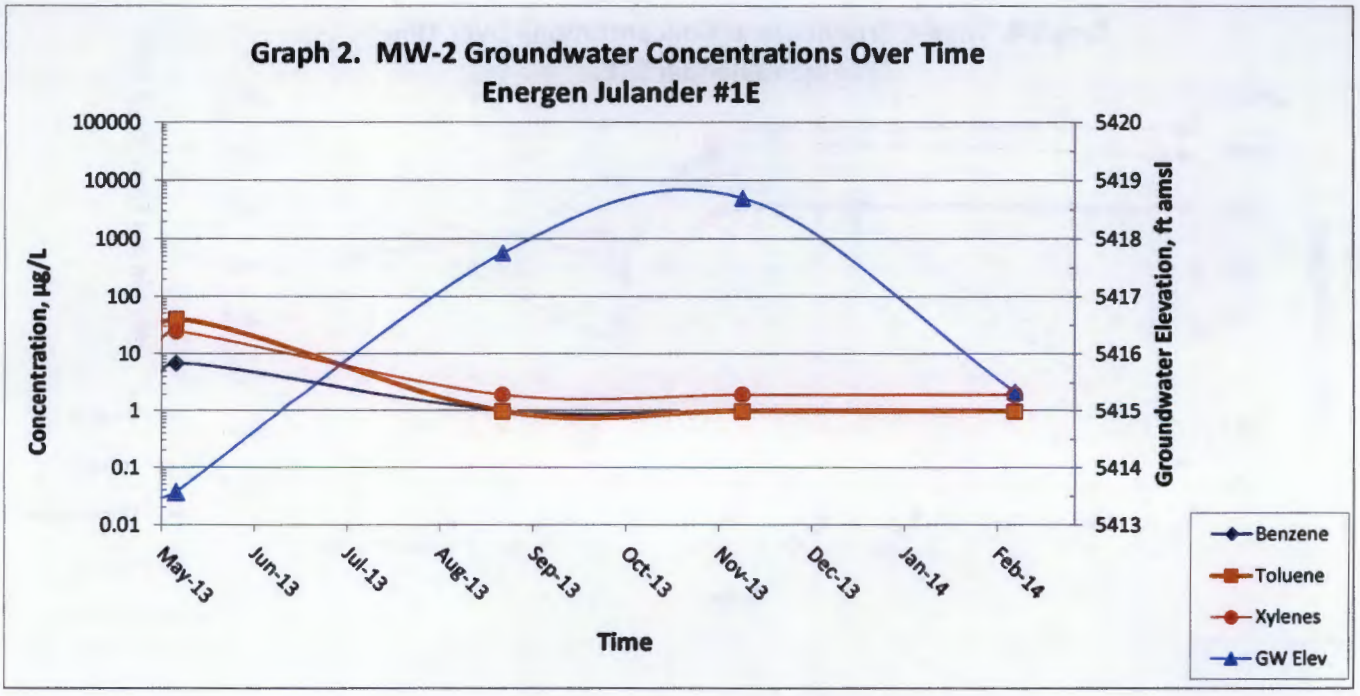
ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE¼ SW¼, SECTION 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

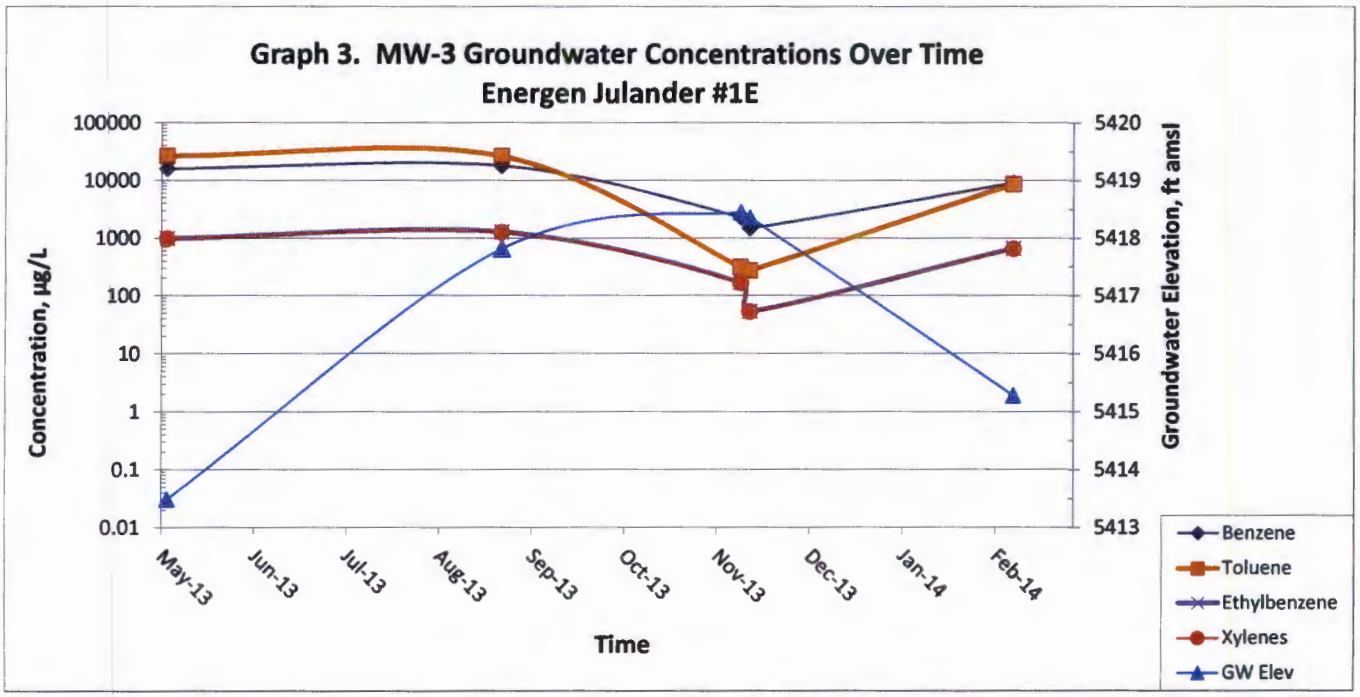


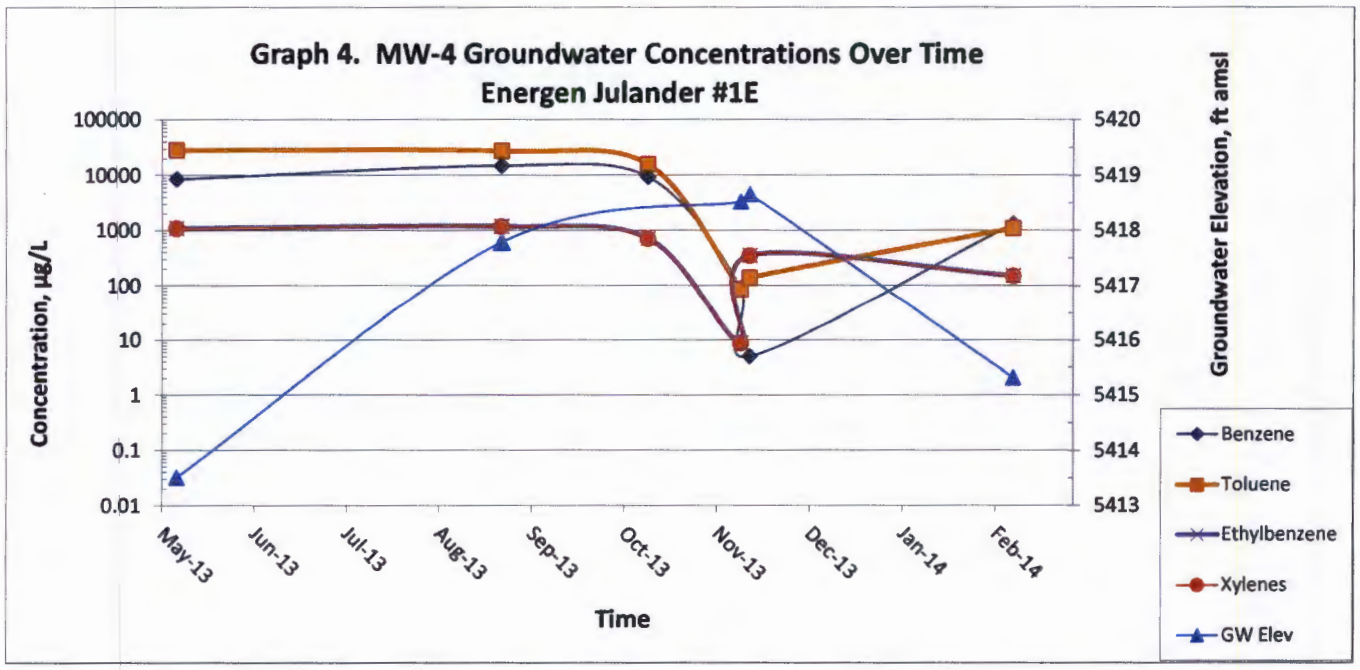
DRAWN BY: C. Lameman	DATE DRAWN: March 17, 2014	**FIGURE 8**
REVISIONS BY: C. Lameman	DATE REVISED: March 17, 2014	**DISSOLVED XYLENE CONCENTRATION CONTOURS, FEBRUARY 2014**
CHECKED BY: H. Woods	DATE CHECKED: March 17, 2014	ENERGEN RESOURCES JULANDER FEDERAL #1E NE¼ SW¼, SECTION 31, T29N, R11W SAN JUAN COUNTY, NEW MEXICO N36.67936, W108.03514
APPROVED BY: E. McNally	DATE APPROVED: March 17, 2014	

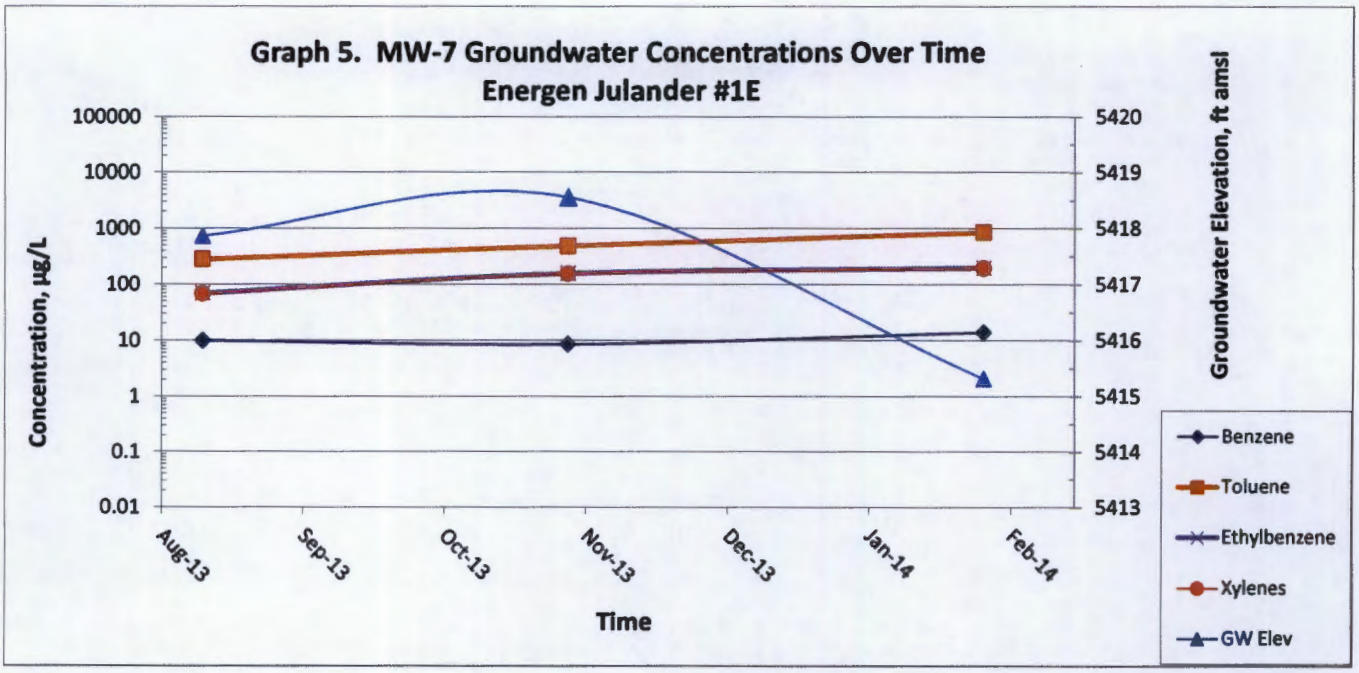
AES
Animas Environmental Services, LLC


Graph 1. MW-1 Groundwater Concentrations Over Time
Energen Julander #1E
Concentration, µg/L
100000
10000
1000
100
10
1
0.1
0.01
Groundwater Elevation, ft amsl
5420
5419
5418
5417
5416
5415
5414
5413
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Time
Benzene
Toluene
Xylenes
GW Elev


Graph 2. MW-2 Groundwater Concentrations Over Time
Energen Julander #1E
Concentration, µg/L
100000
10000
1000
100
10
1
0.1
0.01
Groundwater Elevation, ft amsl
5420
5419
5418
5417
5416
5415
5414
5413
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Time
Benzene
Toluene
Xylenes
GW Elev


Graph 3. MW-3 Groundwater Concentrations Over Time
Energen Julander #1E
Concentration, µg/L
100000
10000
1000
100
10
1
0.1
0.01
Groundwater Elevation, ft amsl
5420
5419
5418
5417
5416
5415
5414
5413
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Time
Benzene
Toluene
Ethylbenzene
Xylenes
GW Elev

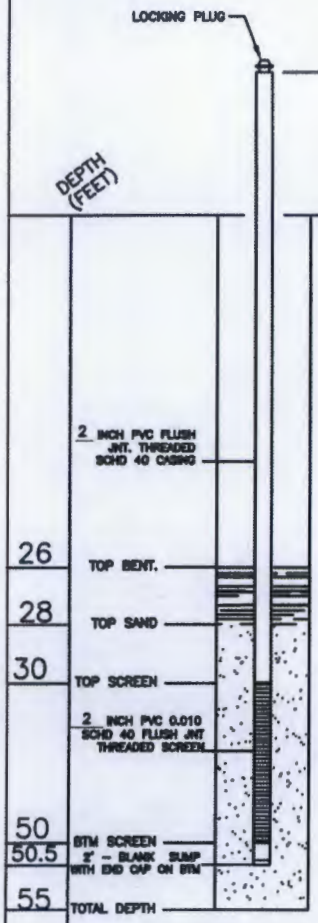

Graph 4. MW-4 Groundwater Concentrations Over Time
Energen Julander #1E
Concentration, µg/L
100000
10000
1000
100
10
1
0.1
0.01
Groundwater Elevation, ft amsl
5420
5419
5418
5417
5416
5415
5414
5413
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Time
Benzene
Toluene
Ethylbenzene
Xylenes
GW Elev


Graph 5. MW-7 Groundwater Concentrations Over Time
Energen Julander #1E
Concentration, µg/L
100000
10000
1000
100
10
1
0.1
0.01
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Jan-14
Feb-14
Time
Groundwater Elevation, ft amsl
5420
5419
5418
5417
5416
5415
5414
5413
Benzene
Toluene
Ethylbenzene
Xylenes
GW Elev

ABOVE GRADE TEMPORARY WELL DIAGRAM / LITHOLOGY LOG

MW _____

SB #1



DEPTH (FEET)	USCS	SAMPLE TYPE	HEADSPACE (PPM)	LITHOLOGY	SAMPLE DESCRIPTION	DEPTH (FEET)
	NS	NS	NS		Backfill Material/Sand	
30	SW	CC	0.0		Medium Grained Sand – Yellowish orange, well sorted	30
35	SM	CC	0.0		Silty Sand – Yellowish orange	35
					Medium Grained Sand – Greenish gray on outside of boring, no odor, light brown, well sorted	
40					Bottom 1' (39'–40') moist, slight cohesion	40
	SW	CC	1637		Medium Grained Sand – Light Brown, Wet, 1" olive gray lense with hydrocarbon odor – sample collected	
45	SW	CC	110		Medium Grained Sand – 1' layer of dark gray sand (45'–46'), light brown sand (46'–50')	45
50	SW	CC	0.0		Medium Grained Sand – Light Brown, wet, no visual contamination	50
55					TD: 55 Feet	55

Well Materials Used:

12 Sks 10–12 Silica Sand
2 Sks Bentonite Chips
___ Sks Class "A" Cement
___ Sks Quickcrete
35 Ft Blank Casing
20 Ft Screen

Well Development:

X Bailed
___ Pumped
17.25 Gallons of Water

Remarks:

Static Water Level: 40.50 Feet
pH: 6.72; EC: 1.01 mS; Temp: 69.9 deg F

DRILLER: Christian Ortiz
HELPER: Edmund Hart
DRILLING COMPANY: Envirodrill
DRILLING METHOD: Hollow Stem Auger

BIT SIZE: 7.25"
TOTAL BORING DEPTH: 55 Feet
DATE STARTED: 03 / 11 / 13
SAMPLER TYPE: Continuous Core

LOCATION: Julander Federal #1E
ELEVATION: 5,456 Ft
DATE COMPLETED 03 / 11 / 13
GEOLOGIST: Toni McKnight

ENVIROTECH INC.
ENVIRONMENTAL SCIENTISTS & ENGINEERS
5796 U.S. HIGHWAY 64
FARMINGTON, NEW MEXICO 87401
(505) 632–0615
AbvGrdlog.dwg

REVISIONS
BY ___ DATE ___
BY ___ DATE ___

JOB # 03022–0193

DATE 3/18/13 DRAWN TM
SCALE ___ APPROVED GC

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Analytical Laboratory

Analytical Report

Report Summary

Client: Energen Resources

Chain Of Custody Number: 15281

Samples Received: 3/11/2013 4:35:00PM

Job Number: 03022-0193

Work Order: P303030

Project Name/Location: Julander Federal #1E

Entire Report Reviewed By: _____ Date: 3/26/14

Tim Cain, Laboratory Manager

Supplement to analytical report generated on: 3/15/13 1:45 pm

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Energen Resources	Project Name:	Julander Federal #1E	
2010 Afton Place	Project Number:	03022-0193	**Reported:**
Farmington NM, 87401	Project Manager:	Etech	26-Mar-14 15:56

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
soil/water at 40'-45'	P303030-01A	Soil	03/11/13	03/11/13	Glass Jar, 4 oz.

Energen Resources	Project Name:	Julander Federal #1E	
2010 Afton Place	Project Number:	03022-0193	**Reported:**
Farmington NM, 87401	Project Manager:	Etech	26-Mar-14 15:56

soil/water at 40'-45'

P303030-01 (Solid)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	0.50	mg/kg	10	1311018	03/14/13	03/14/13	EPA 8021B	
Toluene	**0.79**	0.50	mg/kg	10	1311018	03/14/13	03/14/13	EPA 8021B	
Ethylbenzene	**1.42**	0.50	mg/kg	10	1311018	03/14/13	03/14/13	EPA 8021B	
p,m-Xylene	**11.1**	0.50	mg/kg	10	1311018	03/14/13	03/14/13	EPA 8021B	
o-Xylene	**1.33**	0.50	mg/kg	10	1311018	03/14/13	03/14/13	EPA 8021B	
Total BTEX	**14.6**	0.50	mg/kg	10	1311018	03/14/13	03/14/13	EPA 8021B	
Surrogate: Bromochlorobenzene		*93.7 %*		*80-120*	*1311018*	*03/14/13*	*03/14/13*	*EPA 8021B*	
Nonhalogenated Organics by 8015									
Gasoline Range Organics (C6-C10)	**78.7**	5.00	mg/kg	1	1311017	03/14/13	03/14/13	EPA 8015D	
Diesel Range Organics (C10-C28)	**20.9**	5.00	mg/kg	1	1311017	03/14/13	03/14/13	EPA 8015D	
GRO and DRO Combined Fractions	**99.6**	5.00	mg/kg	1	1311017	03/14/13	03/14/13	EPA 8015D	

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Energen Resources	Project Name:	Julander Federal #1E	
2010 Afton Place	Project Number:	03022-0193	**Reported:**
Farmington NM, 87401	Project Manager:	Etech	26-Mar-14 15:56

Volatile Organics by EPA 8021 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1311018 - Purge and Trap EPA 5030A										
Blank (1311018-BLK1)				Prepared & Analyzed: 14-Mar-13						
Benzene	ND	0.05	mg/kg							
Toluene	ND	0.05	"							
Ethylbenzene	ND	0.05	"							
p,m-Xylene	ND	0.05	"							
o-Xylene	ND	0.05	"							
Total BTEX	ND	0.05	"							
Surrogate: Bromochlorobenzene	*47.6*		*ug/L*	*50.0*		*95.1*	*80-120*			
Duplicate (1311018-DUP1)	**Source: P303038-01**			Prepared & Analyzed: 14-Mar-13						
Benzene	0.52	0.50	mg/kg		0.59			13.2	30	
Toluene	26.1	0.50	"		25.5			2.24	30	
Ethylbenzene	12.5	0.50	"		12.0			4.29	30	
p,m-Xylene	146	0.50	"		133			9.81	30	
o-Xylene	30.3	0.50	"		27.6			9.33	30	
Surrogate: Bromochlorobenzene	*52.8*		*ug/L*	*50.0*		*106*	*80-120*			
Matrix Spike (1311018-MS1)	**Source: P303038-01**			Prepared & Analyzed: 14-Mar-13						
Benzene	50.3		ug/L	50.0	1.19	98.2	39-150			
Toluene	98.2		"	50.0	51.0	94.4	46-148			
Ethylbenzene	76.9		"	50.0	24.0	106	32-160			
p,m-Xylene	357		"	100	266	91.7	46-148			
o-Xylene	106		"	50.0	55.2	101	46-148			
Surrogate: Bromochlorobenzene	*52.2*		*"*	*50.0*		*104*	*80-120*			

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Energen Resources	Project Name:	Julander Federal #1E	
2010 Afton Place	Project Number:	03022-0193	**Reported:**
Farmington NM, 87401	Project Manager:	Etech	26-Mar-14 15:56

Nonhalogenated Organics by 8015 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1311017 - GRO/DRO Extraction EPA 3550C										
Blank (1311017-BLK1)				Prepared & Analyzed: 14-Mar-13						
Gasoline Range Organics (C6-C10)	ND	4.99	mg/kg							
Diesel Range Organics (C10-C28)	ND	4.99	"							
GRO and DRO Combined Fractions	ND	4.99	"							
Duplicate (1311017-DUP1)		**Source: P303038-02**		Prepared & Analyzed: 14-Mar-13						
Gasoline Range Organics (C6-C10)	997	5.00	mg/kg		996			0.104	30	
Diesel Range Organics (C10-C28)	170	5.00	"		169			0.839	30	
Matrix Spike (1311017-MS1)		**Source: P303038-02**		Prepared & Analyzed: 14-Mar-13						
Gasoline Range Organics (C6-C10)	1240		mg/L	225	996	107	75-125			
Diesel Range Organics (C10-C28)	426		"	250	169	103	75-125			

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Energen Resources	Project Name:	Julander Federal #1E	
2010 Afton Place	Project Number:	03022-0193	**Reported:**
Farmington NM, 87401	Project Manager:	Etech	26-Mar-14 15:56

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CHAIN OF CUSTODY RECORD

15281

Client:	Project Name / Location:
Energen	Julander Federal #1E
Email results to:	Sampler Name: T. McKnight
Client Phone No.:	Client No.: 03022-0193

ANALYSIS / PARAMETERS

Sample No./ Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative: $HgCl_2$	Preservative: HCl	Preservative: Cool	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
Soil/water at 40'-45'	3/11/13	11:27	P303030-01	1-4oz			✓	✓	✓												Y	Y

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Toni McKnight	3/11/13	16:35		3/11/13	16:35
Relinquished by: (Signature)			Received by: (Signature)		

Sample Matrix

Soil ☒ Solid ☐ Sludge ☐ Aqueous ☐ Other ☐ _____

☐ Sample(s) dropped off after hours to secure drop off area.

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Analytical Report

Report Summary

Client: Energen Resources

Chain Of Custody Number: 15297

Samples Received: 3/14/2013 4:08:00PM

Job Number: 03022-0193

Work Order: P303046

Project Name/Location: Julander Federal #1E

Entire Report Reviewed By: _____ Date: 3/15/13

Tim Cain, Laboratory Manager

The results in this report apply to the samples submitted to Envirotech's Analytical Laboratory and were analyzed in accordance with the chain of custody document supplied by you, the client, and as such are for your exclusive use only. The results in this report are based on the sample as received unless otherwise noted. Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc. If you have any questions regarding this analytical report, please don't hesitate to contact Envirotech's Laboratory Staff.

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Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
Borehole #1	P303046-01A	Aqueous	03/14/13	03/14/13	Voa vial, 40mL, HCl
	P303046-01B	Aqueous	03/14/13	03/14/13	Voa vial, 40mL, HCl
	P303046-01C	Aqueous	03/14/13	03/14/13	Voa vial, 40mL, HCl

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Borehole #1

P303046-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	**23.8**	1.00	ug/L	1	1311028	15-Mar-13	15-Mar-13	EPA 8021B	
Toluene	**289**	1.00	ug/L	1	1311028	15-Mar-13	15-Mar-13	EPA 8021B	
Ethylbenzene	**401**	1.00	ug/L	1	1311028	15-Mar-13	15-Mar-13	EPA 8021B	
p,m-Xylene	**2560**	1.00	ug/L	1	1311028	15-Mar-13	15-Mar-13	EPA 8021B	
o-Xylene	**727**	1.00	ug/L	1	1311028	15-Mar-13	15-Mar-13	EPA 8021B	
Total BTEX	**4000**	1.00	ug/L	1	1311028	15-Mar-13	15-Mar-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*104 %*	*80-120*		*1311028*	*15-Mar-13*	*15-Mar-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*98.2 %*	*80-120*		*1311028*	*15-Mar-13*	*15-Mar-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*100 %*	*80-120*		*1311028*	*15-Mar-13*	*15-Mar-13*	*EPA 8021B*	

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Volatile Organics by EPA 8021 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1311028 - Purge and Trap EPA 5030A										
Blank (1311028-BLK1)				Prepared & Analyzed: 15-Mar-13						
Benzene	ND	50.0	ug/L							
Toluene	ND	50.0	"							
Ethylbenzene	ND	50.0	"							
p,m-Xylene	ND	50.0	"							
o-Xylene	ND	50.0	"							
Total BTEX	ND	50.0	"							
Surrogate: Bromochlorobenzene	*47.0*		"	*50.0*		*94.0*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*50.4*		"	*50.0*		*101*	*80-120*			
Surrogate: Fluorobenzene	*49.3*		"	*50.0*		*98.6*	*80-120*			
Duplicate (1311028-DUP1)	**Source: P303046-01**			Prepared & Analyzed: 15-Mar-13						
Benzene	23.0	1.00	ug/L		23.8			3.32	200	
Toluene	285	1.00	"		289			1.55	200	
Ethylbenzene	395	1.00	"		401			1.52	200	
p,m-Xylene	2500	1.00	"		2560			2.18	200	
o-Xylene	714	1.00	"		727			1.68	200	
Surrogate: Bromochlorobenzene	*50.3*		"	*50.0*		*101*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*49.1*		"	*50.0*		*98.2*	*80-120*			
Surrogate: Fluorobenzene	*50.7*		"	*50.0*		*101*	*80-120*			
Matrix Spike (1311028-MS1)	**Source: P303046-01**			Prepared & Analyzed: 15-Mar-13						
Benzene	72.3		ug/L	50.0	23.8	97.1	39-150			
Toluene	327		"	50.0	289	76.1	46-148			
Ethylbenzene	441		"	50.0	401	79.4	32-160			
p,m-Xylene	2510		"	100	2560	NR	46-148			S2
o-Xylene	761		"	50.0	727	68.3	46-148			
Surrogate: Bromochlorobenzene	*50.3*		"	*50.0*		*101*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*46.0*		"	*50.0*		*92.1*	*80-120*			
Surrogate: Fluorobenzene	*47.4*		"	*50.0*		*94.8*	*80-120*			

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Notes and Definitions

S2	Surrogate recovery was below acceptable limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

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RUSH

CHAIN OF CUSTODY RECORD

15297

Client: Energen	Project Name / Location: Julander Federal #1E
Email results to:	Sampler Name: T. McKnight
Client Phone No.:	Client No.: 03022-0193

Sample No./ Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative: $HgCl_2$	Preservative: HCl	Preservative: Cool	TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
Borehole #1	3/14/13	14:30	P303046-01A/B/C	3-VOA's		✓	✓		✓												✓	✓

ANALYSIS / PARAMETERS

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Toni McKnight	3/14/13	16:00	Dane Bazzy	3/14/13	4:08
Relinquished by: (Signature)			Received by: (Signature)		

Sample Matrix

Soil ☐ Solid ☐ Sludge ☐ Aqueous ☒ Other ☐ _____

☐ Sample(s) dropped off after hours to secure drop off area.

RUSH

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Photo #1 Client: Energen Resources Corporation Project: Julander Federal #1E Taken by: Heather Woods Date: May 1, 2013	
AES Project No. 130411	Description: Example of Simco direct push drilling rig and equipment used to install MW-2

Photo #2 Client: Energen Resources Corporation Project: Julander Federal #1E Taken by: Heather Woods Date: August 16, 2013	
AES Project No. 130411	Description: View of CME-75 drill rig installing SB-7/MW-8.

Animas Environmental Services, LLC.
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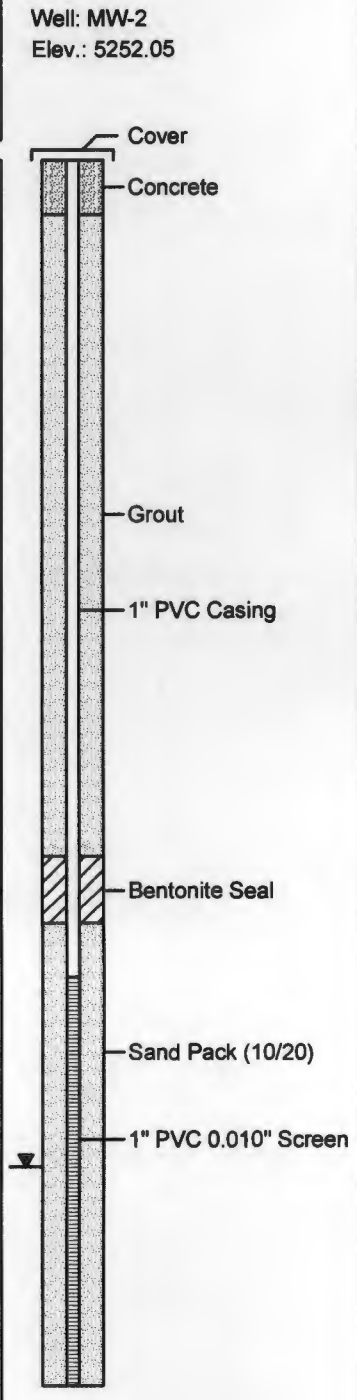
Farmington, NM 87401

LOG OF: SB-1/MW-2

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE1/4 SW1/4, SEC. 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

Date Started	: 04/29/13	Latitude	: N36.67973
Date Completed	: 04/29/13	Longitude	: W108.03517
Hole Diameter	: 2.0 in.	Survey By	: Basin Surveying
Drilling Method	: Simco Direct Push Rig	Logged By	: H. Woods
Sampling Method	: Continuous		

Depth in Feet	Surf. Elev. 0	USCS	GRAPHIC	DESCRIPTION	PID (ppm)
0	0	SC		Gravel (1 inch) underlain by Clayey Sand, Brown, Moist, Fine Grained, No Odor, No Staining.	
5	-5				
10	-10	SP		Poorly Graded Sand, Brown to Tan, Moist, Fine Grained, No Odor, No Staining, Thin Lenses of Clayey Sand, Thin Gravel Lense @ 26.5 feet, Trace Gravel from 28 to 32 feet.	
15	-15				
20	-20				
25	-25				
30	-30				
35	-35				
40	-40	SC		Clayey Sand, Brown, Moist, Fine Grained, No Odor, No Staining, Grading to Sandy Clay at 37feet, Brown, Wet, Fine Grained, No Odor, No Staining, Grading to Poorly Graded Sand with Clay to Clayey Sand at 38.5 feet, Brown, Wet, No Staining, No Odor.	
45	-45	SP		Poorly Graded Sand with Clay to Poorly Graded Sand, Wet, Brown,Fine to Medium Grained, No Odor, No Staining.	
50					



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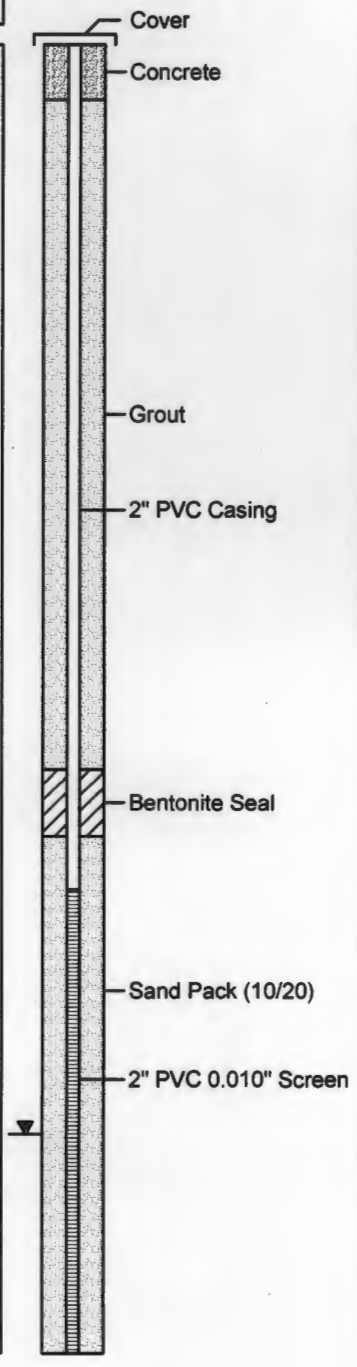
LOG OF : SB-2/MW-4

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE1/4 SW1/4, SEC. 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

Date Started	: 05/01/13	Latitude	: N36.67955
Date Completed	: 05/01/13	Longitude	: W108.03512
Hole Diameter	: 7.25 in.	Survey By	: Basin Surveying
Drilling Method	: CME-75 HSA Drill Rig	Logged By	: H. Woods
Sampling Method	: Split Spoon		

Depth in Feet	Surf. Elev. 5453.72	USCS	GRAPHIC	DESCRIPTION	PID (ppm)
0	5453	SC		Gravel (1 inch), underlain by Clayey Sand, Brown, Moist, Fine to Medium Grained, trace Gravel, Cobbles and Boulders, No Odor, No Staining.	
5	5448				
10	5443				
15	5438	SP		Poorly Graded Sand, Tan to Brown, Moist, Fine Grained, No Odor, No Staining, Lenses of Clayey Sand.	
20	5433				
25	5428				
30	5423				
35	5418	SC		Poorly Graded Sand with Clay Grading to Sandy Clay, Gray, Moist to Wet, Fine Grained, Slight Odor, Slight Staining.	
40	5413	SP		Poorly Graded Sand with Clay to Poorly Graded Sand, Gray, Wet, Fine to Grained, Slight Staining, Moderate Odor.	
45	5408				
50					



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624 East Comanche
Farmington, NM 87401

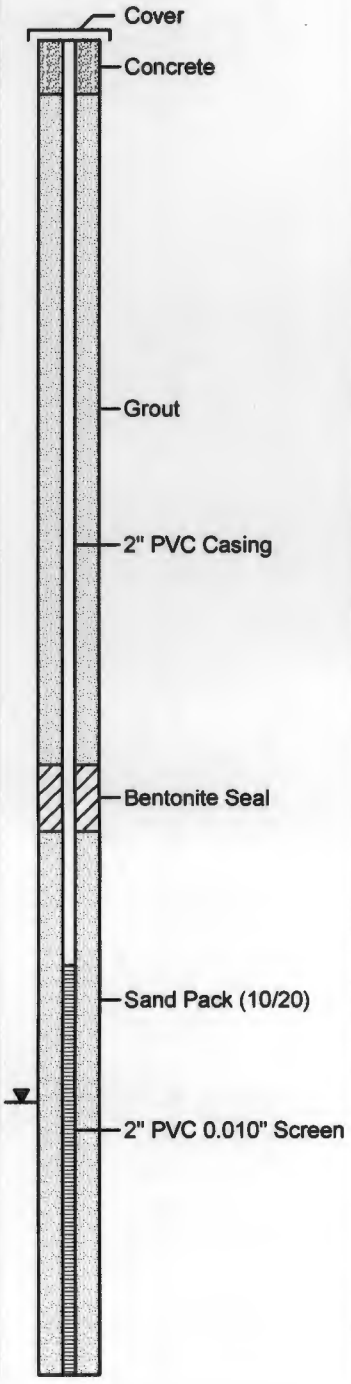
LOG OF : SB-3/MW-3

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE1/4 SW1/4, SEC. 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

Date Started	: 05/01/13	Latitude	: N36.67946
Date Completed	: 05/01/13	Longitude	: W108.03521
Hole Diameter	: 7.25 in.	Survey By	: Basin Surveying
Drilling Method	: CME-75 HSA Drilling Rig	Logged By	: H. Woods
Sampling Method	: Split Spoon		

Depth in Feet	Surf. Elev. 5453.98	USCS	GRAPHIC	DESCRIPTION	PID (ppm)
0	5453	SC		Gravel (1 inch) underlain by Clayey Sand to Poorly Graded Sand, Brown to Tan, Moist, Fine to Large Grained, trace Gravel, Cobbles, and Boulders, No Staining, No Odor.	
5	5448				
10	5443				
15	5438				
20	5433	SP		Poorly Graded Sand, Tan to Brown, Moist, Fine to Medium Grained, No Odor, No Staining, Lenses of Clayey Sand.	
25	5428				
30	5423				
35	5418	CL		Clayey Sand to Clay, Brown to Gray, Moist, No Odor to Moderate Odor, No Staining to Slight Staining.	
40	5413	SP		Poorly Graded Sand with Clay to Poorly Graded Sand, Gray, Moist to Wet, Moderate Odor, Slight Staining.	
45	5408				
50					

Well: MW-3
Elev.: 5453.98



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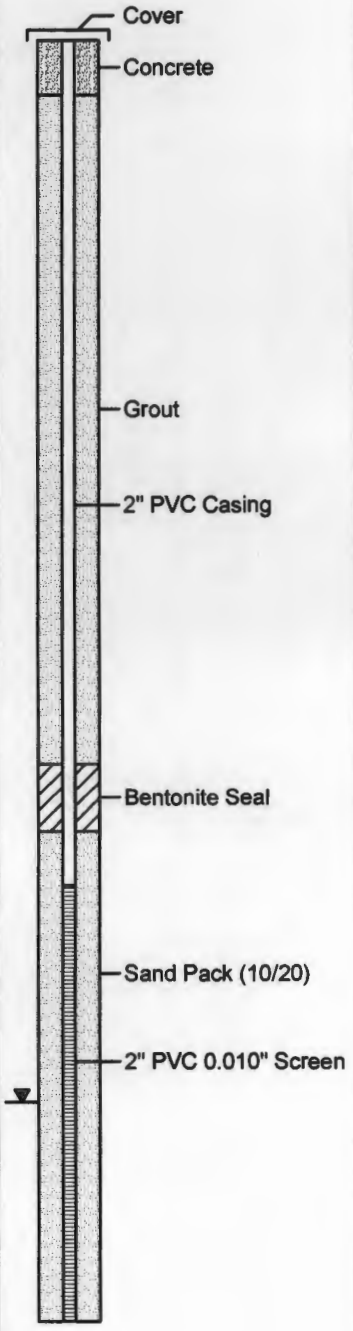
Animas Environmental Services, LLC.
624 East Comanche
Farmington, NM 87401

LOG OF: SB-4/MW-5

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE1/4 SW1/4, SEC. 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

Date Started	: 08/15/13	Latitude	: N36.67942
Date Completed	: 08/15/13	Longitude	: W108.03533
Hole Diameter	: 7.25 in.	Survey By	: Basin Surveying
Drilling Method	: CME-75 HSA Drilling Rig	Logged By	: H. Woods
Sampling Method	: Split Spoon		

Depth in Feet	Surf. Elev. 0	USCS	GRAPHIC	DESCRIPTION	PID (ppm)
0	0	SP		Poorly Graded Sand, Brown, Dry to Moist, Fine to Medium Grained, No Odor, No Staining, Lenses of Clayey Sand.	
35	-35	SP		Poorly Graded Sand to Poorly Graded Sand with Clay, Light Gray, Moist to Wet, Fine to Medium Grained, No Odor, Slight Staining.	1.6
40	-40	CL		Sandy Clay to Clay, Brown, Wet, No Odor, No Staining	4.6
45	-45	SP		Poorly Graded Sand with Clay to Poorly Graded Sand, Brown, Wet, Fine to Medium Grained, No Odor, No Staining.	
50					



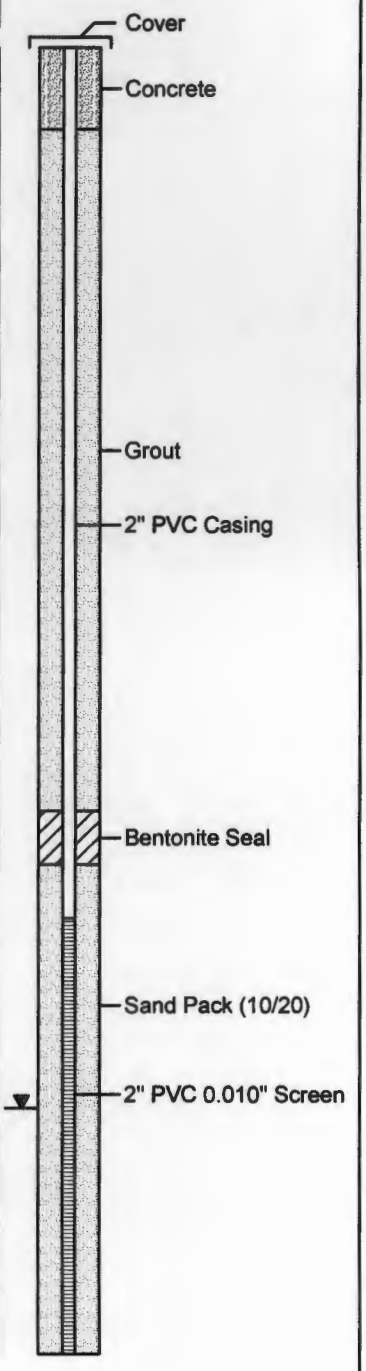
Animas Environmental Services, LLC.
624 East Comanche
Farmington, NM 87401

LOG OF: SB-5/MW-6

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE1/4 SW1/4, SEC. 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

Date Started	: 08/15/13	Latitude	: N36.67958
Date Completed	: 08/15/13	Longitude	: W108.03532
Hole Diameter	: 7.25 in.	Survey By	: Basin Surveying
Drilling Method	: CME-75 HSA Drilling Rig	Logged By	: H. Woods
Sampling Method	: Split Spoon		

Depth in Feet	Surf. Elev. 0	USCS	GRAPHIC	DESCRIPTION	PID (ppm)
0	0	SP		Poorly Graded Sand, Brown, Dry to Moist, Fine to Medium Grained, No Odor, No Staining, Lenses of Clayey Sand.	
5	-5				
10	-10				
15	-15				
20	-20				
25	-25				
30	-30				
35	-35				1.6
40	-40	CL		Sandy Clay to Clay, Light Gray, Moist to Wet, Fine to Medium Grained, No Odor, No to Slight Staining.	2.0
45	-45	SP		Sand with Clay, Wet, Brown, No Odor, No Staining.	
50					



03-21-2014 R:\Animas 2000\Dropbox\0000 Animas Server Dropbox EM2014 Projects\Energen\Julander Federal #1E\Soil Boring Logs\SB-5-MW-6.bor

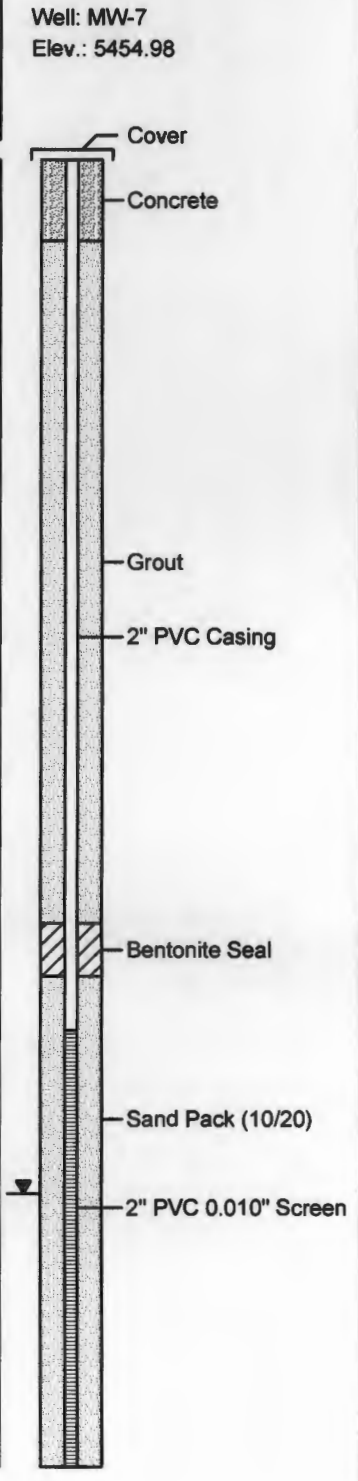
Animas Environmental Services, LLC.
624 East Comanche
Farmington, NM 87401

LOG: SB-6/MW-7

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE1/4 SW1/4, SEC. 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

Date Started	: 08/14/13	Latitude	: N36.67944
Date Completed	: 08/14/13	Longitude	: W108.03503
Hole Diameter	: 7.25 in.	Survey By	: Basin Surveying
Drilling Method	: CME-75 HSA Drilling Rig	Logged By	: H. Woods
Sampling Method	: Split Spoon		

Depth in Feet	Surf. Elev. 0	USCS	DESCRIPTION	PID (ppm)
0	0	SC	Clayey Sand, Brown, Dry to Moist, Fine to Medium Grained, No Odor, No Staining.	
5	-5	SC	Clayey Sand with Gravel and Cobbles,Brown, Moist, Fine to Medium Grained, No Odor, No Staining.	
10	-10	SP	Poorly Graded Sand, Brown, Moist, Fine to Medium Grained, No Odor, No Staining, Lenses of Clayey Sand.	
15	-15			
20	-20			
25	-25			
30	-30			
35	-35			1.7
40	-40	CL	Clayey Sand Grading to Clay, Light Gray to Medium Gray, Moist to Wet, Fine to Medium Grained, Slight to Strong Odor, Slight to Moderate Staining.	393
45	-45	SP	Poorly Graded Sand with Clay to Clayey Sand, Light to Medium Gray, Wet, Moderate to Strong Odor, Slight to Moderate Staining.	
50				



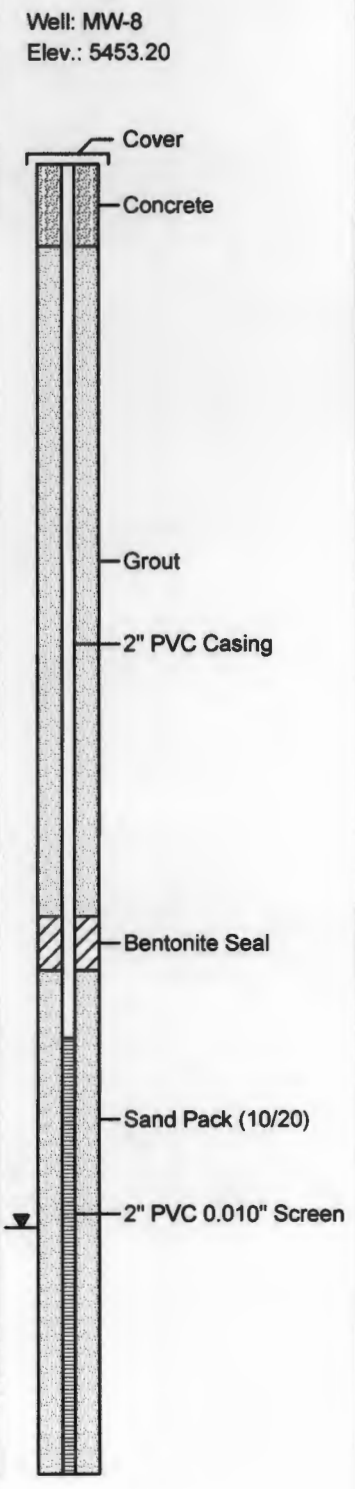
Animas Environmental Services, LLC.
624 East Comanche
Farmington, NM 87401

LOG OF: SB-7/MW-8

ENERGEN RESOURCES
JULANDER FEDERAL #1E
NE1/4 SW1/4, SEC. 31, T29N, R11W
SAN JUAN COUNTY, NEW MEXICO
N36.67936, W108.03514

Date Started	: 08/16/13	Latitude	: N36.67937
Date Completed	: 08/16/13	Longitude	: W108.03502
Hole Diameter	: 7.25 in.	Survey By	: Basin Surveying
Drilling Method	: CME-75 HSA Drilling Rig	Logged By	: H. Woods
Sampling Method	: Split Spoon		

Depth in Feet	Surf. Elev. 0	USCS	GRAPHIC	DESCRIPTION	PID (ppm)
0	0	SC		Clayey Sand Grading to Poorly Graded Sand with Clay, Brown, Dry to Moist, Fine to Medium Grained, No Odor, No Staining.	
10	-10	SP		Poorly Graded Sand, Brown, Moist to Wet, Fine to Medium Grained, No Odor, No Staining, Lenses of Clayey Sand.	
35	-35				4.0
40	-40	CL		Sandy Clay to Clay, Brown, Wet, No Odor, No Staining.	3.7
45	-45	SP		Poorly Graded Sand with Clay, Brown, Wet, No Odor, No Staining.	
50					



envirotech
Analytical Laboratory

Analytical Report

Report Summary

Client: Animas Environmental Services

Chain Of Custody Number: 15462

Samples Received: 4/29/2013 4:00:00PM

Job Number: 99083-0001

Work Order: P304088

Project Name/Location: Energen Julander Fed #1E

Entire Report Reviewed By: _____ Date: 4/30/13

Tim Cain, Laboratory Manager

The results in this report apply to the samples submitted to Envirotech's Analytical Laboratory and were analyzed in accordance with the chain of custody document supplied by you, the client, and as such are for your exclusive use only. The results in this report are based on the sample as received unless otherwise noted. Partial or incomplete reproduction of this report is prohibited, unless approved by Envirotech, Inc. If you have any questions regarding this analytical report, please don't hesitate to contact Envirotech's Laboratory Staff.

envirotech
Analytical Laboratory

Animas Environmental Services	Project Name:	Energen Julander Fed #1E	
624 E. Comanche St.	Project Number:	99083-0001	**Reported:**
Farmington NM, 87401-6815	Project Manager:	Heather Woods	30-Apr-13 11:23

Analyical Report for Samples

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
MW-2 HW 5/21/14	P304088-01A	Water	04/29/13	04/29/13	Voa vial, 40mL, HCl
	P304088-01B	Water	04/29/13	04/29/13	Voa vial, 40mL, HCl
	P304088-01C	Water	04/29/13	04/29/13	Voa vial, 40mL, HCl

envirotech
Analytical Laboratory

Animas Environmental Services	Project Name:	Energen Julander Fed #1E	
624 E. Comanche St.	Project Number:	99083-0001	**Reported:**
Farmington NM, 87401-6815	Project Manager:	Heather Woods	30-Apr-13 11:23

MW-12 HW 3/21/14

P304088-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Volatile Organics by EPA 8021									
Benzene	ND	1.00	ug/L	1	1318008	29-Apr-13	29-Apr-13	EPA 8021B	
Toluene	ND	1.00	ug/L	1	1318008	29-Apr-13	29-Apr-13	EPA 8021B	
Ethylbenzene	ND	1.00	ug/L	1	1318008	29-Apr-13	29-Apr-13	EPA 8021B	
p,m-Xylene	**7.66**	1.00	ug/L	1	1318008	29-Apr-13	29-Apr-13	EPA 8021B	
o-Xylene	**4.34**	1.00	ug/L	1	1318008	29-Apr-13	29-Apr-13	EPA 8021B	
Total BTEX	**12.0**	1.00	ug/L	1	1318008	29-Apr-13	29-Apr-13	EPA 8021B	
Surrogate: Bromochlorobenzene		*95.8 %*	*80-120*		*1318008*	*29-Apr-13*	*29-Apr-13*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*94.8 %*	*80-120*		*1318008*	*29-Apr-13*	*29-Apr-13*	*EPA 8021B*	
Surrogate: Fluorobenzene		*94.5 %*	*80-120*		*1318008*	*29-Apr-13*	*29-Apr-13*	*EPA 8021B*	

envirotech
Analytical Laboratory

Animas Environmental Services	Project Name:	Energen Julander Fed #1E	
624 E. Comanche St.	Project Number:	99083-0001	**Reported:**
Farmington NM, 87401-6815	Project Manager:	Heather Woods	30-Apr-13 11:23

Volatile Organics by EPA 8021 - Quality Control

Envirotech Analytical Laboratory

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1318008 - Purge and Trap EPA 5030A										
Blank (1318008-BLK1)				Prepared & Analyzed: 29-Apr-13						
Benzene	ND	1.00	ug/L							
Toluene	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
p,m-Xylene	ND	1.00	"							
o-Xylene	ND	1.00	"							
Total BTEX	ND	1.00	"							
Surrogate: Bromochlorobenzene	*47.0*		"	*50.0*		*94.0*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*48.9*		"	*50.0*		*97.8*	*80-120*			
Surrogate: Fluorobenzene	*48.6*		"	*50.0*		*97.3*	*80-120*			
Duplicate (1318008-DUP1)	**Source: P304088-01**			Prepared & Analyzed: 29-Apr-13						
Benzene	ND	1.00	ug/L		ND				30	
Toluene	ND	1.00	"		ND				30	
Ethylbenzene	ND	1.00	"		ND				30	
p,m-Xylene	7.96	1.00	"		7.66			3.75	30	
o-Xylene	4.56	1.00	"		4.34			4.88	30	
Surrogate: Bromochlorobenzene	*49.9*		"	*50.0*		*99.8*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*49.5*		"	*50.0*		*99.1*	*80-120*			
Surrogate: Fluorobenzene	*49.4*		"	*50.0*		*98.7*	*80-120*			
Matrix Spike (1318008-MS1)	**Source: P304088-01**			Prepared & Analyzed: 29-Apr-13						
Benzene	49.7	1.00	ug/L	50.0	ND	99.4	39-150			
Toluene	49.5	1.00	"	50.0	ND	99.0	46-148			
Ethylbenzene	49.2	1.00	"	50.0	ND	98.4	32-160			
p,m-Xylene	105	1.00	"	100	7.66	97.3	46-148			
o-Xylene	52.8	1.00	"	50.0	4.34	96.9	46-148			
Surrogate: Bromochlorobenzene	*49.5*		"	*50.0*		*98.9*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*47.9*		"	*50.0*		*95.9*	*80-120*			
Surrogate: Fluorobenzene	*48.1*		"	*50.0*		*96.2*	*80-120*			

Animas Environmental Services	Project Name:	Energen Julander Fed #1E	
624 E. Comanche St.	Project Number:	99083-0001	**Reported:**
Farmington NM, 87401-6815	Project Manager:	Heather Woods	30-Apr-13 11:23

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

RUSH

CHAIN OF CUSTODY RECORD

15462

Client:	Project Name / Location:
Animas Environmental Services	Energen Julander Fed #1E
Email results to: hwoods@animasenvironmental.com ; rkennemer@animasenvironmental.com	Sampler Name: H. Woods
Client Phone No.: 505-564-2281	Client No.: 99083-0001

Sample No./ Identification	Sample Date	Sample Time	Lab No.	No./Volume of Containers	Preservative $HgCl_2$	Preservative HCl		TPH (Method 8015)	BTEX (Method 8021)	VOC (Method 8260)	RCRA 8 Metals	Cation / Anion	RCI	TCLP with H/P	CO Table 910-1	TPH (418.1)	CHLORIDE				Sample Cool	Sample Intact
MW-X2 HW 3/21/14	4/29/13	1525	P304088-01	3-40mL VOA		X			X												Y	Y

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Heather M. Woods	4/29/13	1600	Rene Gonzales	4/29/13	1600
Relinquished by: (Signature)			Received by: (Signature)		

Sample Matrix

Soil ☐ Solid ☐ Sludge ☐ Aqueous ☒ Other ☐ _____

☒ Sample(s) dropped off after hours to secure drop off area.

RUSH - ASAP

envirotech
Analytical Laboratory

5795 US Highway 64 • Farmington, NM 87401 • 505-632-0615 • Three Springs • 65 Mercado Street, Suite 115, Durango, CO 81301 • laboratory@envirotech-inc.com

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 26, 2013

Ross Kennemer
Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 486-1776
FAX (505) 324-2022

RE: Energen Julander Federal #1E OrderNo.: 1308A96

Dear Ross Kennemer:

Hall Environmental Analysis Laboratory received 9 sample(s) on 8/24/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1308A96**
Date Reported: **8/26/2013**

CLIENT: Animas Environmental Services
Project: Energen Julander Federal #1E
Lab ID: 1308A96-001 **Matrix:** AQUEOUS

Client Sample ID: MW-1
Collection Date: 8/23/2013 2:25:00 PM
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	10		µg/L	10	8/24/2013 3:35:50 PM	R12864
Toluene	110	10		µg/L	10	8/24/2013 3:35:50 PM	R12864
Ethylbenzene	470	10		µg/L	10	8/24/2013 3:35:50 PM	R12864
Xylenes, Total	4000	100		µg/L	50	8/24/2013 3:07:11 PM	R12864
Surr: 4-Bromofluorobenzene	116	69.4-129		%REC	10	8/24/2013 3:35:50 PM	R12864

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-2
Project: Energen Julander Federal #1E
Collection Date: 8/23/2013 10:42:00 AM
Lab ID: 1308A96-002
Matrix: AQUEOUS
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	8/24/2013 5:30:18 PM	R12864
Toluene	ND	1.0		µg/L	1	8/24/2013 5:30:18 PM	R12864
Ethylbenzene	ND	1.0		µg/L	1	8/24/2013 5:30:18 PM	R12864
Xylenes, Total	ND	2.0		µg/L	1	8/24/2013 5:30:18 PM	R12864
Surr: 4-Bromofluorobenzene	102	69.4-129		%REC	1	8/24/2013 5:30:18 PM	R12864

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-3
Project: Energen Julander Federal #1E
Collection Date: 8/23/2013 3:05:00 PM
Lab ID: 1308A96-003
Matrix: AQUEOUS
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	18000	500		µg/L	500	8/24/2013 5:58:54 PM	R12864
Toluene	27000	500		µg/L	500	8/24/2013 5:58:54 PM	R12864
Ethylbenzene	1300	100		µg/L	100	8/24/2013 6:27:32 PM	R12864
Xylenes, Total	12000	200		µg/L	100	8/24/2013 6:27:32 PM	R12864
Surr: 4-Bromofluorobenzene	111	69.4-129		%REC	100	8/24/2013 6:27:32 PM	R12864

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-4
Project: Energen Julander Federal #1E
Collection Date: 8/23/2013 4:09:00 PM
Lab ID: 1308A96-004
Matrix: AQUEOUS
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	15000	500		µg/L	500	8/24/2013 7:24:46 PM	R12864
Toluene	28000	500		µg/L	500	8/24/2013 7:24:46 PM	R12864
Ethylbenzene	1200	100		µg/L	100	8/24/2013 7:53:24 PM	R12864
Xylenes, Total	11000	200		µg/L	100	8/24/2013 7:53:24 PM	R12864
Surr: 4-Bromofluorobenzene	109	69.4-129		%REC	100	8/24/2013 7:53:24 PM	R12864

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-5
Project: Energen Julander Federal #1E
Collection Date: 8/23/2013 1:25:00 PM
Lab ID: 1308A96-005
Matrix: AQUEOUS
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	5.3	2.0		µg/L	2	8/25/2013 1:15:24 PM	R12869
Toluene	ND	2.0		µg/L	2	8/25/2013 1:15:24 PM	R12869
Ethylbenzene	ND	2.0		µg/L	2	8/25/2013 1:15:24 PM	R12869
Xylenes, Total	29	4.0		µg/L	2	8/25/2013 1:15:24 PM	R12869
Surr: 4-Bromofluorobenzene	104	69.4-129		%REC	2	8/25/2013 1:15:24 PM	R12869

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-6
Project: Energen Julander Federal #1E
Collection Date: 8/23/2013 12:38:00 PM
Lab ID: 1308A96-006
Matrix: AQUEOUS
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	2.0		µg/L	2	8/25/2013 2:12:35 PM	R12869
Toluene	ND	2.0		µg/L	2	8/25/2013 2:12:35 PM	R12869
Ethylbenzene	ND	2.0		µg/L	2	8/25/2013 2:12:35 PM	R12869
Xylenes, Total	ND	4.0		µg/L	2	8/25/2013 2:12:35 PM	R12869
Surr: 4-Bromofluorobenzene	102	69.4-129		%REC	2	8/25/2013 2:12:35 PM	R12869

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-7
Project: Energen Julander Federal #1E
Collection Date: 8/23/2013 3:24:00 PM
Lab ID: 1308A96-007
Matrix: AQUEOUS
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	10		µg/L	10	8/25/2013 3:10:02 PM	R12869
Toluene	290	10		µg/L	10	8/25/2013 3:10:02 PM	R12869
Ethylbenzene	70	10		µg/L	10	8/25/2013 3:10:02 PM	R12869
Xylenes, Total	630	20		µg/L	10	8/25/2013 3:10:02 PM	R12869
Surr: 4-Bromofluorobenzene	109	69.4-129		%REC	10	8/25/2013 3:10:02 PM	R12869

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-8
Project: Energen Julander Federal #1E
Collection Date: 8/23/2013 11:38:00 AM
Lab ID: 1308A96-008
Matrix: AQUEOUS
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	2.0		µg/L	2	8/25/2013 5:04:41 PM	R12869
Toluene	ND	2.0		µg/L	2	8/25/2013 5:04:41 PM	R12869
Ethylbenzene	ND	2.0		µg/L	2	8/25/2013 5:04:41 PM	R12869
Xylenes, Total	ND	4.0		µg/L	2	8/25/2013 5:04:41 PM	R12869
Surr: 4-Bromofluorobenzene	101	69.4-129		%REC	2	8/25/2013 5:04:41 PM	R12869

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: Trip Blank
Project: Energen Julander Federal #1E
Collection Date:
Lab ID: 1308A96-009
Matrix: TRIP BLANK
Received Date: 8/24/2013 10:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	8/25/2013 2:33:56 AM	R12864
Toluene	ND	1.0		µg/L	1	8/25/2013 2:33:56 AM	R12864
Ethylbenzene	ND	1.0		µg/L	1	8/25/2013 2:33:56 AM	R12864
Xylenes, Total	ND	2.0		µg/L	1	8/25/2013 2:33:56 AM	R12864
Surr: 4-Bromofluorobenzene	100	69.4-129		%REC	1	8/25/2013 2:33:56 AM	R12864

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1308A96**

26-Aug-13

Client: Animas Environmental Services

Project: Energen Julander Federal #1E

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R12864**	RunNo: **12864**
Prep Date:	Analysis Date: **8/24/2013**	SeqNo: **366697** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		103	69.4	129			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R12864**	RunNo: **12864**
Prep Date:	Analysis Date: **8/24/2013**	SeqNo: **366698** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	80	120			
Toluene	21	1.0	20.00	0	103	80	120			
Ethylbenzene	21	1.0	20.00	0	106	80	120			
Xylenes, Total	64	2.0	60.00	0	107	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		105	69.4	129			

Sample ID **1308A96-001AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-1**	Batch ID: **R12864**	RunNo: **12864**
Prep Date:	Analysis Date: **8/24/2013**	SeqNo: **366701** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	220	10	200.0	0	108	73.4	119			
Toluene	320	10	200.0	108.8	107	80	120			
Ethylbenzene	690	10	200.0	469.8	111	80	120			
Xylenes, Total	4300	20	600.0	3655	114	80	120			E
Surr: 4-Bromofluorobenzene	240		200.0		118	69.4	129			

Sample ID **1308A96-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-1**	Batch ID: **R12864**	RunNo: **12864**
Prep Date:	Analysis Date: **8/24/2013**	SeqNo: **366702** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	200	10	200.0	0	98.3	73.4	119	9.73	20	
Toluene	290	10	200.0	108.8	90.0	80	120	10.9	20	
Ethylbenzene	630	10	200.0	469.8	78.9	80	120	9.63	20	S
Xylenes, Total	3900	20	600.0	3655	49.0	80	120	9.46	20	SE
Surr: 4-Bromofluorobenzene	240		200.0		118	69.4	129	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1308A96**

26-Aug-13

Client: Animas Environmental Services

Project: Energen Julander Federal #1E

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R12869**	RunNo: **12869**
Prep Date:	Analysis Date: **8/25/2013**	SeqNo: **366799** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		102	69.4	129			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R12869**	RunNo: **12869**
Prep Date:	Analysis Date: **8/25/2013**	SeqNo: **366800** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	106	80	120			
Toluene	21	1.0	20.00	0	103	80	120			
Ethylbenzene	21	1.0	20.00	0	105	80	120			
Xylenes, Total	63	2.0	60.00	0	106	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		105	69.4	129			

Sample ID **1308A96-007AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-7**	Batch ID: **R12869**	RunNo: **12869**
Prep Date:	Analysis Date: **8/25/2013**	SeqNo: **366805** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	220	10	200.0	4.500	105	73.4	119			
Toluene	510	10	200.0	287.6	111	80	120			
Ethylbenzene	290	10	200.0	70.03	108	80	120			
Xylenes, Total	1300	20	600.0	631.1	109	80	120			
Surr: 4-Bromofluorobenzene	220		200.0		110	69.4	129			

Sample ID **1308A96-007AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-7**	Batch ID: **R12869**	RunNo: **12869**
Prep Date:	Analysis Date: **8/25/2013**	SeqNo: **366806** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	200	10	200.0	4.500	96.8	73.4	119	8.30	20	
Toluene	460	10	200.0	287.6	88.6	80	120	9.01	20	
Ethylbenzene	260	10	200.0	70.03	94.9	80	120	9.75	20	
Xylenes, Total	1200	20	600.0	631.1	92.1	80	120	8.18	20	
Surr: 4-Bromofluorobenzene	220		200.0		112	69.4	129	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Animas Environmental** Work Order Number: **1308A96** RcptNo: **1**

Received by/date: AF 08/24/13

Logged By: **Michelle Garcia** 8/24/2013 10:20:00 AM Michelle Garcia

Completed By: **Michelle Garcia** 8/24/2013 10:47:10 AM Michelle Garcia

Reviewed By: MG 08/24/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No	NA
6. Sample(s) in proper container(s)?	Yes ✔	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No	
9. Was preservative added to bottles?	Yes	No ✔	NA
10. VOA vials have zero headspace?	Yes ✔	No	No VOA Vials
11. Were any sample containers received broken?	Yes	No ✔	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No	Adjusted?
14. Is it clear what analyses were requested?	Yes ✔	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No	Checked by:

Special Handling (If applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✔

Person Notified: Date:

By Whom: Via: eMail Phone Fax In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Yes			

Chain of Custody Record

Client: Animas Environmental Services, LLC	☐ Standard X Rush_ Same Day - Results 8/26 before 4:00pm
Mailing Address: 624 E. Comanche	Project Name: Energen Julander Federal #1E
Farmington, NM 87401	Project #:
Phone #: 505-564-2281	
email or Fax#:	Project Manager: Ross Kennemer
QA/QC Package: X Standard ☐ Level 4 (Full Validation)	Sampler:
Accreditation: ☐ NELAP ☐ Other	On Ice: Yes No
☐ EDD (Type)	Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX (8021)	Air Bubbles (Y or N)
8/23/2013	1425	H2O	MW-1	3 - 40 ml VOA	HCl	-001	X	
8/23/2013	1042	H2O	MW-2	3 - 40 ml VOA	HCl	-002	X	
8/23/2013	1505	H2O	MW-3	3 - 40 ml VOA	HCl	-003	X	
8/23/2013	1609	H2O	MW-4	3 - 40 ml VOA	HCl	-004	X	
8/23/2013	1325	H2O	MW-5	3 - 40 ml VOA	HCl	-005	X	
8/23/2013	1238	H2O	MW-6	3 - 40 ml VOA	HCl	-006	X	
8/23/2013	0524	H2O	MW-7	3 - 40 ml VOA	HCl	-007	X	
8/23/2013	1138	H2O	MW-8	3 - 40 ml VOA	HCl	-008	X	
			Trip Blank	2 - 40 mL VOA		-009		

Date:	Time:	Relinquished by:	Received by:	Date	Time
8-23-13	1745		Matt Walta	8/23/13	1745
8/23/71	1756	Matt Walta		8/24/13	10:20

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

May 13, 2013

H. Woods
Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 564-2281
FAX: (505) 324-2022

RE: Energen Julander Fed #1E OrderNo.: 1305125

Dear H. Woods:

Hall Environmental Analysis Laboratory received 3 sample(s) on 5/3/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1305125**
Date Reported: **5/13/2013**

CLIENT: Animas Environmental Services
Project: Energen Julander Fed #1E
Lab ID: 1305125-001 **Matrix:** SOIL

Client Sample ID: SB-1 @ 37.5'-39'
Collection Date: 4/29/2013 10:38:00 AM
Received Date: 5/3/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/7/2013 10:30:47 PM
Surr: DNOP	123	63-147		%REC	1	5/7/2013 10:30:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/6/2013 7:30:36 PM
Surr: BFB	91.2	80-120		%REC	1	5/6/2013 7:30:36 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.047		mg/Kg	1	5/6/2013 7:30:36 PM
Toluene	ND	0.047		mg/Kg	1	5/6/2013 7:30:36 PM
Ethylbenzene	ND	0.047		mg/Kg	1	5/6/2013 7:30:36 PM
Xylenes, Total	ND	0.094		mg/Kg	1	5/6/2013 7:30:36 PM
Surr: 4-Bromofluorobenzene	95.2	80-120		%REC	1	5/6/2013 7:30:36 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: SB-2 @ 40'-41'
Project: Energen Julander Fed #1E
Collection Date: 5/1/2013 10:15:00 AM
Lab ID: 1305125-002 **Matrix:** SOIL **Received Date:** 5/3/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	74	10		mg/Kg	1	5/8/2013 12:19:36 AM
Surr: DNOP	124	63-147		%REC	1	5/8/2013 12:19:36 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	2100	47		mg/Kg	10	5/6/2013 8:00:53 PM
Surr: BFB	327	80-120	S	%REC	10	5/6/2013 8:00:53 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	9.0	0.47		mg/Kg	10	5/6/2013 8:00:53 PM
Toluene	74	2.3		mg/Kg	50	5/7/2013 3:37:57 PM
Ethylbenzene	11	0.47		mg/Kg	10	5/6/2013 8:00:53 PM
Xylenes, Total	93	0.93		mg/Kg	10	5/6/2013 8:00:53 PM
Surr: 4-Bromofluorobenzene	129	80-120	S	%REC	10	5/6/2013 8:00:53 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: SB-3 @ 39'-40'
Project: Energen Julander Fed #1E
Collection Date: 5/1/2013 2:43:00 PM
Lab ID: 1305125-003 **Matrix:** SOIL **Received Date:** 5/3/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	80	9.9		mg/Kg	1	5/8/2013 12:46:48 AM
Surr: DNOP	117	63-147		%REC	1	5/8/2013 12:46:48 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	1300	92		mg/Kg	20	5/6/2013 8:31:04 PM
Surr: BFB	208	80-120	S	%REC	20	5/6/2013 8:31:04 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	2.1	0.92		mg/Kg	20	5/6/2013 8:31:04 PM
Toluene	19	0.92		mg/Kg	20	5/6/2013 8:31:04 PM
Ethylbenzene	7.8	0.92		mg/Kg	20	5/6/2013 8:31:04 PM
Xylenes, Total	70	1.8		mg/Kg	20	5/6/2013 8:31:04 PM
Surr: 4-Bromofluorobenzene	116	80-120		%REC	20	5/6/2013 8:31:04 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1305125**

13-May-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID: **MB-7313**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **7313**	RunNo: **10338**
Prep Date: **5/6/2013**	Analysis Date: **5/7/2013**	SeqNo: **295279** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	9.5		10.00		94.6	63	147			

Sample ID: **LCS-7313**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **7313**	RunNo: **10338**
Prep Date: **5/6/2013**	Analysis Date: **5/7/2013**	SeqNo: **295357** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	47.4	122			
Surr: DNOP	4.9		5.000		97.9	63	147			

Sample ID: **1305125-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **SB-1 @ 37.5'-39'**	Batch ID: **7313**	RunNo: **10446**
Prep Date: **5/6/2013**	Analysis Date: **5/7/2013**	SeqNo: **295998** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	10	49.95	0	117	12.6	148			
Surr: DNOP	6.3		4.995		127	63	147			

Sample ID: **1305125-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **SB-1 @ 37.5'-39'**	Batch ID: **7313**	RunNo: **10446**
Prep Date: **5/6/2013**	Analysis Date: **5/7/2013**	SeqNo: **296000** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	61	10	50.05	0	122	12.6	148	4.04	22.5	
Surr: DNOP	6.5		5.005		130	63	147	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1305125**

13-May-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID: **MB-7285**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **7285**	RunNo: **10327**
Prep Date: **5/3/2013**	Analysis Date: **5/6/2013**	SeqNo: **294720** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		90.8	80	120			

Sample ID: **LCS-7285**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **7285**	RunNo: **10327**
Prep Date: **5/3/2013**	Analysis Date: **5/6/2013**	SeqNo: **294721** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	29	5.0	25.00	0	118	62.6	136			
Surr: BFB	1100		1000		113	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1305125**

13-May-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID: **MB-7285**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **7285**	RunNo: **10327**
Prep Date: **5/3/2013**	Analysis Date: **5/6/2013**	SeqNo: **294748** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.99		1.000		99.2	80	120			

Sample ID: **LCS-7285**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **7285**	RunNo: **10327**
Prep Date: **5/3/2013**	Analysis Date: **5/6/2013**	SeqNo: **294749** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.050	1.000	0	95.6	80	120			
Toluene	0.95	0.050	1.000	0	95.4	80	120			
Ethylbenzene	0.97	0.050	1.000	0	96.7	80	120			
Xylenes, Total	3.0	0.10	3.000	0	98.8	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1305125 RcptNo: 1

Received by/date: LM 05/03/13

Logged By: Michelle Garcia 5/3/2013 10:00:00 AM Michelle Garcia

Completed By: Michelle Garcia 5/3/2013 11:34:44 AM Michelle Garcia

Reviewed By: MG 05/03/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Yes			

Chain-of-Custody Record

Client: Animas Environmental Services

Mailing Address: 624 E. Comanche
Farmington, NM 87401

Phone #: 505-564-2281

email or Fax#: hwoods@animasenvironmental.com

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ____________

☐ EDD (Type) ____________

Turn-Around Time:
☒ Standard ☐ Rush ________

Project Name:
Energen Julander Fed #1E

Project #:

Project Manager:
H. Woods

Sampler: H. Woods
On Ice: ☒ Yes ☐ No
Sample Temperature: 2.8

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. [illegible]	BTEX + ~~MTBE~~ + ~~TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
4/29/13	1038	Soil	SB-1@37.5'-39'	1-4oz	—	-001	X		X									
5/1/13	1015	Soil	SB-2@40'-41'	1-4oz	—	-002	X		X									
5/1/13	1443	Soil	SB-3@39'-40'	1-4oz	—	-003	X		X									

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/2/13	1521	Heather M. Woods	Christine Walters	5/2/13	1521
5/2/13	1615	Christine Walters	[signature]	05/03/13	1000

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

May 13, 2013

H. Woods
Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 564-2281
FAX: (505) 324-2022

RE: Energen Julander Fed #1E OrderNo.: 1305217

Dear H. Woods:

Hall Environmental Analysis Laboratory received 4 sample(s) on 5/7/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1305217**
Date Reported: **5/13/2013**

CLIENT: Animas Environmental Services
Client Sample ID: MW-3
Project: Energen Julander Fed #1E
Collection Date: 5/6/2013 12:44:00 PM
Lab ID: 1305217-001 **Matrix:** AQUEOUS **Received Date:** 5/7/2013 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**
Diesel Range Organics (DRO)	1.2	1.0		mg/L	1	5/10/2013 12:22:26 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	5/10/2013 12:22:26 PM
Surr: DNOP	132	75.4-146		%REC	1	5/10/2013 12:22:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	120	5.0		mg/L	100	5/8/2013 12:58:29 PM
Surr: BFB	96.6	51.5-151		%REC	100	5/8/2013 12:58:29 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	16000	500		µg/L	500	5/8/2013 12:28:07 PM
Toluene	27000	500		µg/L	500	5/8/2013 12:28:07 PM
Ethylbenzene	1000	100		µg/L	100	5/8/2013 12:58:29 PM
Xylenes, Total	9500	200		µg/L	100	5/8/2013 12:58:29 PM
Surr: 4-Bromofluorobenzene	106	69.4-129		%REC	100	5/8/2013 12:58:29 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-4
Project: Energen Julander Fed #1E
Collection Date: 5/6/2013 1:45:00 PM
Lab ID: 1305217-002 **Matrix:** AQUEOUS **Received Date:** 5/7/2013 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**
Diesel Range Organics (DRO)	1.2	1.0		mg/L	1	5/10/2013 12:49:29 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	5/10/2013 12:49:29 PM
Surr: DNOP	137	75.4-146		%REC	1	5/10/2013 12:49:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	110	5.0		mg/L	100	5/8/2013 3:30:06 PM
Surr: BFB	97.4	51.5-151		%REC	100	5/8/2013 3:30:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	8500	100		µg/L	100	5/8/2013 3:30:06 PM
Toluene	29000	500		µg/L	500	5/8/2013 2:59:42 PM
Ethylbenzene	1100	100		µg/L	100	5/8/2013 3:30:06 PM
Xylenes, Total	10000	200		µg/L	100	5/8/2013 3:30:06 PM
Surr: 4-Bromofluorobenzene	107	69.4-129		%REC	100	5/8/2013 3:30:06 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-1
Project: Energen Julander Fed #1E
Collection Date: 5/6/2013 12:08:00 PM
Lab ID: 1305217-003
Matrix: AQUEOUS
Received Date: 5/7/2013 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	5/10/2013 1:16:42 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	5/10/2013 1:16:42 PM
Surr: DNOP	132	75.4-146		%REC	1	5/10/2013 1:16:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	17	0.50		mg/L	10	5/8/2013 6:01:27 PM
Surr: BFB	130	51.5-151		%REC	10	5/8/2013 6:01:27 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	10		µg/L	10	5/8/2013 6:01:27 PM
Toluene	77	10		µg/L	10	5/8/2013 6:01:27 PM
Ethylbenzene	470	10		µg/L	10	5/8/2013 6:01:27 PM
Xylenes, Total	3900	100		µg/L	50	5/8/2013 5:31:11 PM
Surr: 4-Bromofluorobenzene	119	69.4-129		%REC	10	5/8/2013 6:01:27 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-2
Project: Energen Julander Fed #1E
Collection Date: 5/6/2013 3:00:00 PM
Lab ID: 1305217-004
Matrix: AQUEOUS
Received Date: 5/7/2013 9:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015D: DIESEL RANGE						Analyst: **JME**
Diesel Range Organics (DRO)	ND	1.0		mg/L	1	5/10/2013 1:43:45 PM
Motor Oil Range Organics (MRO)	ND	5.0		mg/L	1	5/10/2013 1:43:45 PM
Surr: DNOP	149	75.4-146	S	%REC	1	5/10/2013 1:43:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	0.22	0.050		mg/L	1	5/8/2013 7:01:57 PM
Surr: BFB	94.8	51.5-151		%REC	1	5/8/2013 7:01:57 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	6.8	1.0		µg/L	1	5/8/2013 7:01:57 PM
Toluene	40	1.0		µg/L	1	5/8/2013 7:01:57 PM
Ethylbenzene	2.7	1.0		µg/L	1	5/8/2013 7:01:57 PM
Xylenes, Total	25	2.0		µg/L	1	5/8/2013 7:01:57 PM
Surr: 4-Bromofluorobenzene	102	69.4-129		%REC	1	5/8/2013 7:01:57 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1305217**

13-May-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID: **MB-7386**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **PBW**	Batch ID: **7386**	RunNo: **10540**
Prep Date: **5/10/2013**	Analysis Date: **5/10/2013**	SeqNo: **297792** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.3		1.000		132	75.4	146			

Sample ID: **LCS-7386**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSW**	Batch ID: **7386**	RunNo: **10540**
Prep Date: **5/10/2013**	Analysis Date: **5/10/2013**	SeqNo: **297846** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	6.2	1.0	5.000	0	124	89.1	151			
Surr: DNOP	0.70		0.5000		141	75.4	146			

Sample ID: **LCSD-7386**	SampType: **LCSD**	TestCode: **EPA Method 8015D: Diesel Range**
Client ID: **LCSS02**	Batch ID: **7386**	RunNo: **10540**
Prep Date: **5/10/2013**	Analysis Date: **5/10/2013**	SeqNo: **297847** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	7.4	1.0	5.000	0	148	89.1	151	17.6	20	
Surr: DNOP	0.80		0.5000		160	75.4	146	0	0	S

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1305217**

13-May-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID: **5ML RB** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **PBW** Batch ID: **R10452** RunNo: **10452**

Prep Date: Analysis Date: **5/7/2013** SeqNo: **295757** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	18		20.00		91.2	51.5	151			

Sample ID: **2.5UG GRO LCS** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **LCSW** Batch ID: **R10452** RunNo: **10452**

Prep Date: Analysis Date: **5/7/2013** SeqNo: **295758** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	20		20.00		98.3	51.5	151			

Sample ID: **5ML RB** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **PBW** Batch ID: **R10499** RunNo: **10499**

Prep Date: Analysis Date: **5/8/2013** SeqNo: **296831** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	0.050								
Surr: BFB	18		20.00		92.4	51.5	151			

Sample ID: **2.5UG GRO LCS** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **LCSW** Batch ID: **R10499** RunNo: **10499**

Prep Date: Analysis Date: **5/8/2013** SeqNo: **296832** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	0.56	0.050	0.5000	0	111	73.2	124			
Surr: BFB	20		20.00		100	51.5	151			

Sample ID: **1305217-001AMS** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **MW-3** Batch ID: **R10499** RunNo: **10499**

Prep Date: Analysis Date: **5/8/2013** SeqNo: **296837** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	170	5.0	50.00	117.5	103	65.2	137			
Surr: BFB	2100		2000		103	51.5	151			

Sample ID: **1305217-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **MW-3** Batch ID: **R10499** RunNo: **10499**

Prep Date: Analysis Date: **5/8/2013** SeqNo: **296838** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	160	5.0	50.00	117.5	88.6	65.2	137	4.28	20	
Surr: BFB	2000		2000		102	51.5	151	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2	R	RPD outside accepted recovery limits
RL	Reporting Detection Limit	S	Spike Recovery outside accepted recovery limits

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1305217**

13-May-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID: **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R10452**	RunNo: **10452**
Prep Date:	Analysis Date: **5/7/2013**	SeqNo: **295770** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	20		20.00		99.6	69.4	129			

Sample ID: **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R10499**	RunNo: **10499**
Prep Date:	Analysis Date: **5/8/2013**	SeqNo: **296846** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		98.5	69.4	129			

Sample ID: **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R10499**	RunNo: **10499**
Prep Date:	Analysis Date: **5/8/2013**	SeqNo: **296847** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	90.2	80	120			
Toluene	18	1.0	20.00	0	92.2	80	120			
Ethylbenzene	18	1.0	20.00	0	91.8	80	120			
Xylenes, Total	57	2.0	60.00	0	95.2	80	120			
Surr: 4-Bromofluorobenzene	19		20.00		97.3	69.4	129			

Sample ID: **1305217-002AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-4**	Batch ID: **R10499**	RunNo: **10499**
Prep Date:	Analysis Date: **5/8/2013**	SeqNo: **296852** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	3100	100	2000	1067	103	80	120			
Xylenes, Total	17000	200	6000	10340	103	80	120			
Surr: 4-Bromofluorobenzene	2200		2000		109	69.4	129			

Sample ID: **1305217-002AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-4**	Batch ID: **R10499**	RunNo: **10499**
Prep Date:	Analysis Date: **5/8/2013**	SeqNo: **296853** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	3100	100	2000	1067	99.5	80	120	2.12	20	
Xylenes, Total	16000	200	6000	10340	95.1	80	120	2.99	20	
Surr: 4-Bromofluorobenzene	2200		2000		109	69.4	129	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- RL Reporting Detection Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1305217 RcptNo: 1

Received by/date: MG 05/07/13

Logged By: Michelle Garcia 5/7/2013 9:45:00 AM Michelle Garcia

Completed By: Michelle Garcia 5/7/2013 11:10:06 AM Michelle Garcia

Reviewed By: JO 05/07/2013

Chain of Custody

1. Custody seals intact on sample bottles?	Yes	No	Not Present ✓
2. Is Chain of Custody complete?	Yes ✓	No	Not Present
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✓	No	NA
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✓	No	NA
6. Sample(s) in proper container(s)?	Yes ✓	No	
7. Sufficient sample volume for indicated test(s)?	Yes ✓	No	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✓	No	
9. Was preservative added to bottles?	Yes	No ✓	NA
10. VOA vials have zero headspace?	Yes ✓	No	No VOA Vials
11. Were any sample containers received broken?	Yes	No ✓	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✓	No	
13. Are matrices correctly identified on Chain of Custody?	Yes ✓	No	Adjusted?
14. Is it clear what analyses were requested?	Yes ✓	No	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✓	No	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes No NA ✓

Person Notified: Date:

By Whom: Via: eMail Phone Fax In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Animas Environmental Services

Mailing Address: 624 E. Comanche
Farmington, NM 87401

Phone #: 505-564-2281

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name:
Energen Julander Fed #1E

Project #:

Project Manager:
H. Woods

Sampler: L. Lamone
On Ice: ☒ Yes ☐ No
Sample Temperature: 1.5

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
5-6-2013	1244	H2O	MW-3	6 VOAs	HCL/None	-001	X		X									
	1345	H2O	MW-4	6 VOAs	HCL/None	-002	X		X									
	1208	H2O	MW-1	6 VOAs	HCL/None	-003	X		X									
✓	1500	H2O	MW-2	6 VOAs	HCL/None	-004	X		X									

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/6/13	1749			5/6/13	1749
Date:	Time:	Relinquished by:	Received by:	Date	Time
5/6/13	1800			05/07/13	0945

Remarks:
Per Heather analyze for TPH GRO/DRO/MRO 05/07/13

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

August 27, 2013

Ross Kennemer

Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 486-1776
FAX (505) 324-2022

RE: Energen Julander Federal #1E OrderNo.: 1308877

Dear Ross Kennemer:

Hall Environmental Analysis Laboratory received 4 sample(s) on 8/20/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1308877**
Date Reported: **8/27/2013**

CLIENT: Animas Environmental Services
Project: Energen Julander Federal #1E
Lab ID: 1308877-001 **Matrix:** SOIL

Client Sample ID: MW-5 @ 35'-36.5'
Collection Date: 8/15/2013 9:12:00 AM
Received Date: 8/20/2013 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/23/2013 5:30:23 PM	8973
Surr: DNOP	92.8	63-147		%REC	1	8/23/2013 5:30:23 PM	8973
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/22/2013 4:11:49 PM	8964
Surr: BFB	91.6	80-120		%REC	1	8/22/2013 4:11:49 PM	8964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.047		mg/Kg	1	8/22/2013 4:11:49 PM	8964
Toluene	ND	0.047		mg/Kg	1	8/22/2013 4:11:49 PM	8964
Ethylbenzene	ND	0.047		mg/Kg	1	8/22/2013 4:11:49 PM	8964
Xylenes, Total	ND	0.094		mg/Kg	1	8/22/2013 4:11:49 PM	8964
Surr: 4-Bromofluorobenzene	102	80-120		%REC	1	8/22/2013 4:11:49 PM	8964

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander Federal #1E
Lab ID: 1308877-002 **Matrix:** SOIL

Client Sample ID: MW-6 @ 35'-36.5'
Collection Date: 8/15/2013 1:17:00 PM
Received Date: 8/20/2013 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS							Analyst: **JME**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/23/2013 7:00:43 PM	8973
Surr: DNOP	104	63-147		%REC	1	8/23/2013 7:00:43 PM	8973
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/22/2013 4:40:24 PM	8964
Surr: BFB	91.6	80-120		%REC	1	8/22/2013 4:40:24 PM	8964
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**
Benzene	ND	0.047		mg/Kg	1	8/22/2013 4:40:24 PM	8964
Toluene	ND	0.047		mg/Kg	1	8/22/2013 4:40:24 PM	8964
Ethylbenzene	ND	0.047		mg/Kg	1	8/22/2013 4:40:24 PM	8964
Xylenes, Total	ND	0.094		mg/Kg	1	8/22/2013 4:40:24 PM	8964
Surr: 4-Bromofluorobenzene	103	80-120		%REC	1	8/22/2013 4:40:24 PM	8964

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander Federal #1E
Lab ID: 1308877-003 **Matrix:** SOIL

Client Sample ID: MW-7 @ 35'36.5'
Collection Date: 8/14/2013 1:45:00 PM
Received Date: 8/20/2013 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/23/2013 7:31:00 PM	8973
Surr: DNOP	87.6	63-147		%REC	1	8/23/2013 7:31:00 PM	8973
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/22/2013 5:09:06 PM	8964
Surr: BFB	91.1	80-120		%REC	1	8/22/2013 5:09:06 PM	8964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	8/22/2013 5:09:06 PM	8964
Toluene	ND	0.048		mg/Kg	1	8/22/2013 5:09:06 PM	8964
Ethylbenzene	ND	0.048		mg/Kg	1	8/22/2013 5:09:06 PM	8964
Xylenes, Total	ND	0.096		mg/Kg	1	8/22/2013 5:09:06 PM	8964
Surr: 4-Bromofluorobenzene	102	80-120		%REC	1	8/22/2013 5:09:06 PM	8964

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander Federal #1E
Lab ID: 1308877-004 **Matrix:** SOIL

Client Sample ID: MW-8 @ 35'-36.5'
Collection Date: 8/16/2013 1:37:00 PM
Received Date: 8/20/2013 9:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/23/2013 8:01:13 PM	8973
Surr: DNOP	83.3	63-147		%REC	1	8/23/2013 8:01:13 PM	8973
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/22/2013 5:37:51 PM	8964
Surr: BFB	91.3	80-120		%REC	1	8/22/2013 5:37:51 PM	8964
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	8/22/2013 5:37:51 PM	8964
Toluene	ND	0.048		mg/Kg	1	8/22/2013 5:37:51 PM	8964
Ethylbenzene	ND	0.048		mg/Kg	1	8/22/2013 5:37:51 PM	8964
Xylenes, Total	ND	0.096		mg/Kg	1	8/22/2013 5:37:51 PM	8964
Surr: 4-Bromofluorobenzene	103	80-120		%REC	1	8/22/2013 5:37:51 PM	8964

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1308877**

27-Aug-13

Client: Animas Environmental Services

Project: Energen Julander Federal #1E

Sample ID **MB-8973**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **8973**	RunNo: **12805**
Prep Date: **8/21/2013**	Analysis Date: **8/23/2013**	SeqNo: **366788** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	8.4		10.00		83.8	63	147			

Sample ID **LCS-8973**	SampType: **LCS**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **8973**	RunNo: **12805**
Prep Date: **8/21/2013**	Analysis Date: **8/23/2013**	SeqNo: **366789** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	101	77.1	128			
Surr: DNOP	4.6		5.000		92.0	63	147			

Sample ID **1308877-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **MW-5 @ 35'-36.5'**	Batch ID: **8973**	RunNo: **12805**
Prep Date: **8/21/2013**	Analysis Date: **8/23/2013**	SeqNo: **366790** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.05	0	96.9	61.3	138			
Surr: DNOP	4.9		5.005		97.2	63	147			

Sample ID **1308877-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Diesel Range Organics**
Client ID: **MW-5 @ 35'-36.5'**	Batch ID: **8973**	RunNo: **12805**
Prep Date: **8/21/2013**	Analysis Date: **8/23/2013**	SeqNo: **366791** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.20	0	104	61.3	138	7.11	20	
Surr: DNOP	4.7		5.020		92.9	63	147	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1308877**

27-Aug-13

Client: Animas Environmental Services

Project: Energen Julander Federal #1E

Sample ID **MB-8964**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **8964**	RunNo: **12836**
Prep Date: **8/21/2013**	Analysis Date: **8/22/2013**	SeqNo: **365870** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	890		1000		88.6	80	120			

Sample ID **LCS-8964**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **8964**	RunNo: **12836**
Prep Date: **8/21/2013**	Analysis Date: **8/22/2013**	SeqNo: **365871** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.4	74.5	126			
Surr: BFB	930		1000		92.9	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1308877**

27-Aug-13

Client: Animas Environmental Services

Project: Energen Julander Federal #1E

Sample ID **MB-8964**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **8964**	RunNo: **12836**
Prep Date: **8/21/2013**	Analysis Date: **8/22/2013**	SeqNo: **366022** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

Sample ID **LCS-8964**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **8964**	RunNo: **12836**
Prep Date: **8/21/2013**	Analysis Date: **8/22/2013**	SeqNo: **366023** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.050	1.000	0	102	80	120			
Toluene	1.0	0.050	1.000	0	99.9	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID **MB-8998**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **8998**	RunNo: **12857**
Prep Date: **8/22/2013**	Analysis Date: **8/23/2013**	SeqNo: **366600** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

Sample ID **LCS-8998**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **8998**	RunNo: **12857**
Prep Date: **8/22/2013**	Analysis Date: **8/23/2013**	SeqNo: **366601** Units: **%REC**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1308877 RcptNo: 1

Received by/date: AM 08/20/13

Logged By: Anne Thorne 8/20/2013 9:50:00 AM Anne Thorne

Completed By: Anne Thorne 8/20/2013 Anne Thorne

Reviewed By: mg 08/21/13

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☑
2. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☑ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
9. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
11. Were any sample containers received broken? Yes ☐ No ☑
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
14. Is it clear what analyses were requested? Yes ☑ No ☐
15. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Animas Environmental Services

Mailing Address: 624 E. Comanche
Farmington, NM 87401

Phone #: 505-564-2281

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name:
Energen Julander Federal #1E

Project #:

Project Manager:
R. Kennemer

Sampler: H. Woods / A. Riling

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1305577	BTEX + [illegible] (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / [illegible])	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
8/15/13	912	Soil	MW-5@ 35'-36.5'	1-4 oz	—	-001	X		X													
8/15/13	1317	Soil	MW-6@ 35'-36.5'	1-4 oz	—	-002	X		X													
8/14/13	1345	Soil	MW-7@ 35'-36.5'	1-4 oz	—	-003	X		X													
8/14/13	1337	Soil	MW-8@ 35'-36.5'	1-4 oz	—	-004	X		X													

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Date	Time
8/19/13	1450	Heather M. Woods	Christine Walters	8/19/13	1450
8/19/13	1600	Christine Walters		08/20/13	0950

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL
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ANALYSIS
LABORATORY

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Website: www.hallenvironmental.com

October 22, 2013

Ross Kennemer
Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 486-1776
FAX (505) 324-2022

RE: Energen Julander #1E OrderNo.: 1310665

Dear Ross Kennemer:

Hall Environmental Analysis Laboratory received 3 sample(s) on 10/12/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1310665**
Date Reported: **10/22/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander #1E
Lab ID: 1310665-001 **Matrix:** AIR

Client Sample ID: Well Gas MW-4
Collection Date: 10/10/2013 3:45:00 PM
Received Date: 10/12/2013 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1.2	1.1		PPM-V	1	10/15/2013 1:21:15 PM	R14105
Surr: BFB	104	26.3-265		%REC	1	10/15/2013 1:21:15 PM	R14105
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	0.068		PPM-V	1	10/15/2013 1:21:15 PM	R14105
Benzene	0.17	0.031		PPM-V	1	10/15/2013 1:21:15 PM	R14105
Toluene	0.22	0.026		PPM-V	1	10/15/2013 1:21:15 PM	R14105
Ethylbenzene	ND	0.023		PPM-V	1	10/15/2013 1:21:15 PM	R14105
Xylenes, Total	0.063	0.045		PPM-V	1	10/15/2013 1:21:15 PM	R14105
Surr: 4-Bromofluorobenzene	115	74-118		%REC	1	10/15/2013 1:21:15 PM	R14105

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: Well Gas MW-4
Project: Energen Julander #1E
Collection Date: 10/11/2013 1:05:00 PM
Lab ID: 1310665-002 **Matrix:** AIR **Received Date:** 10/12/2013 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: GASOLINE RANGE							Analyst: **NSB**
Gasoline Range Organics (GRO)	6.5	1.1		PPM-V	1	10/15/2013 12:53:42 PM	R14105
Surr: BFB	108	26.3-265		%REC	1	10/15/2013 12:53:42 PM	R14105
EPA METHOD 8021B: VOLATILES							Analyst: **NSB**
Methyl tert-butyl ether (MTBE)	ND	0.068		PPM-V	1	10/15/2013 12:53:42 PM	R14105
Benzene	0.17	0.031		PPM-V	1	10/15/2013 12:53:42 PM	R14105
Toluene	0.35	0.026		PPM-V	1	10/15/2013 12:53:42 PM	R14105
Ethylbenzene	0.036	0.023		PPM-V	1	10/15/2013 12:53:42 PM	R14105
Xylenes, Total	0.14	0.068		PPM-V	1	10/15/2013 12:53:42 PM	R14105
Surr: 4-Bromofluorobenzene	120	75.4-151		%REC	1	10/15/2013 12:53:42 PM	R14105

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-4
Project: Energen Julander #1E
Collection Date: 10/11/2013 1:15:00 PM
Lab ID: 1310665-003 **Matrix:** AQUEOUS **Received Date:** 10/12/2013 10:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Methyl tert-butyl ether (MTBE)	ND	250		µg/L	100	10/15/2013 4:49:41 PM	R14105
Benzene	9300	100		µg/L	100	10/15/2013 4:49:41 PM	R14105
Toluene	16000	500		µg/L	500	10/15/2013 4:19:24 PM	R14105
Ethylbenzene	720	100		µg/L	100	10/15/2013 4:49:41 PM	R14105
Xylenes, Total	6800	200		µg/L	100	10/15/2013 4:49:41 PM	R14105
1,2,4-Trimethylbenzene	340	100		µg/L	100	10/15/2013 4:49:41 PM	R14105
1,3,5-Trimethylbenzene	140	100		µg/L	100	10/15/2013 4:49:41 PM	R14105
Surr: 4-Bromofluorobenzene	124	85-136		%REC	100	10/15/2013 4:49:41 PM	R14105

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1310665 RcptNo: 1

Received by/date: AT 10/12/13

Logged By: Anne Thorne 10/12/2013 10:15:00 AM Anne Thorne

Completed By: Anne Thorne 10/15/2013 Anne Thorne

Reviewed By: AT 10/15/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (If applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.3	Good	Yes			

Chain-of-Custody Record

Client: Animas Environmental Services LLC

Mailing Address: 624 E Comanche Farmington NM 87401

Phone #: 505 564 2281

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☒ Standard ☐ Rush

Project Name: Energen Julander #1E

Project #:

Project Manager: Ross Kennemer

Sampler: J. Christopherson / R. Kennemer

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1310165	BTEX + [redacted] (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)
10-10-13	1545	Air	Well Gas MW-4	2-tedlarbags	—	-001	X		X								
10-11-13	1305	Air	Well Gas MW-4	2-tedlarbag	—	-002	X		X								
10-11-13	1315	H_2O	MW-4	3-40mL VOA	HCl	-003	X										

Date	Time	Relinquished by:	Received by:	Date	Time
10/11/13	1658			10/11/13	1658
10/11/13	1715			10/12/13	1015

Remarks: Please report BTEX/GRO in ppmV for Well Gas.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 15, 2013

Heather Woods
Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 716-2787
FAX

RE: Energen Julander #1E OrderNo.: 1311460

Dear Heather Woods:

Hall Environmental Analysis Laboratory received 9 sample(s) on 11/12/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander #1E
Lab Order: 1311460

Lab ID: 1311460-001 **Collection Date:** 11/11/2013 1:20:00 PM
Client Sample ID: MW-1 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	5.0		µg/L	5	11/13/2013 4:22:45 PM	R1476E
Toluene	92	5.0		µg/L	5	11/13/2013 4:22:45 PM	R1476E
Ethylbenzene	360	5.0		µg/L	5	11/13/2013 4:22:45 PM	R1476E
Xylenes, Total	3200	100		µg/L	50	11/13/2013 3:52:30 PM	R1476E
Surr: 4-Bromofluorobenzene	133	85-136		%REC	5	11/13/2013 4:22:45 PM	R1476E

Lab ID: 1311460-002 **Collection Date:** 11/11/2013 3:24:00 PM
Client Sample ID: MW-2 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	11/13/2013 8:24:23 PM	R1476E
Toluene	ND	1.0		µg/L	1	11/13/2013 8:24:23 PM	R1476E
Ethylbenzene	ND	1.0		µg/L	1	11/13/2013 8:24:23 PM	R1476E
Xylenes, Total	ND	2.0		µg/L	1	11/13/2013 8:24:23 PM	R1476E
Surr: 4-Bromofluorobenzene	101	85-136		%REC	1	11/13/2013 8:24:23 PM	R1476E

Lab ID: 1311460-003 **Collection Date:** 11/11/2013 2:25:00 PM
Client Sample ID: MW-3 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	2300	100		µg/L	100	11/13/2013 9:24:40 PM	R1476E
Toluene	320	100		µg/L	100	11/13/2013 9:24:40 PM	R1476E
Ethylbenzene	170	100		µg/L	100	11/13/2013 9:24:40 PM	R1476E
Xylenes, Total	910	200		µg/L	100	11/13/2013 9:24:40 PM	R1476E
Surr: 4-Bromofluorobenzene	105	85-136		%REC	100	11/13/2013 9:24:40 PM	R1476E

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander #1E
Lab Order: 1311460

Lab ID: 1311460-004 **Collection Date:** 11/11/2013 1:54:00 PM
Client Sample ID: MW-4 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	89	5.0		µg/L	5	11/14/2013 3:52:32 PM	R14824
Toluene	87	5.0		µg/L	5	11/14/2013 3:52:32 PM	R14824
Ethylbenzene	8.8	5.0		µg/L	5	11/14/2013 3:52:32 PM	R14824
Xylenes, Total	68	10		µg/L	5	11/14/2013 3:52:32 PM	R14824
Surr: 4-Bromofluorobenzene	103	85-136		%REC	5	11/14/2013 3:52:32 PM	R14824

Lab ID: 1311460-005 **Collection Date:** 11/11/2013 11:06:00 AM
Client Sample ID: MW-5 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	11/13/2013 11:55:23 PM	R14766
Toluene	ND	1.0		µg/L	1	11/13/2013 11:55:23 PM	R14766
Ethylbenzene	ND	1.0		µg/L	1	11/13/2013 11:55:23 PM	R14766
Xylenes, Total	ND	2.0		µg/L	1	11/13/2013 11:55:23 PM	R14766
Surr: 4-Bromofluorobenzene	100	85-136		%REC	1	11/13/2013 11:55:23 PM	R14766

Lab ID: 1311460-006 **Collection Date:** 11/11/2013 10:27:00 AM
Client Sample ID: MW-6 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	11/14/2013 12:25:27 AM	R14766
Toluene	ND	1.0		µg/L	1	11/14/2013 12:25:27 AM	R14766
Ethylbenzene	ND	1.0		µg/L	1	11/14/2013 12:25:27 AM	R14766
Xylenes, Total	ND	2.0		µg/L	1	11/14/2013 12:25:27 AM	R14766
Surr: 4-Bromofluorobenzene	94.8	85-136		%REC	1	11/14/2013 12:25:27 AM	R14766

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander #1E
Lab Order: 1311460

Lab ID: 1311460-007 **Collection Date:** 11/11/2013 12:34:00 PM
Client Sample ID: MW-7 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	8.6	5.0		µg/L	5	11/14/2013 12:55:39 AM	R1476(
Toluene	500	20		µg/L	20	11/14/2013 4:22:44 PM	R1482(
Ethylbenzene	160	5.0		µg/L	5	11/14/2013 12:55:39 AM	R1476(
Xylenes, Total	1200	10		µg/L	5	11/14/2013 12:55:39 AM	R1476(
Surr: 4-Bromofluorobenzene	120	85-136		%REC	5	11/14/2013 12:55:39 AM	R1476(

Lab ID: 1311460-008 **Collection Date:** 11/11/2013 11:49:00 AM
Client Sample ID: MW-8 **Matrix:** AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	11/14/2013 1:56:08 AM	R1476(
Toluene	ND	1.0		µg/L	1	11/14/2013 1:56:08 AM	R1476(
Ethylbenzene	ND	1.0		µg/L	1	11/14/2013 1:56:08 AM	R1476(
Xylenes, Total	ND	2.0		µg/L	1	11/14/2013 1:56:08 AM	R1476(
Surr: 4-Bromofluorobenzene	104	85-136		%REC	1	11/14/2013 1:56:08 AM	R1476(

Lab ID: 1311460-009 **Collection Date:**
Client Sample ID: Trip Blank **Matrix:** TRIP BLANK

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	11/14/2013 2:26:21 AM	R1476(
Toluene	ND	1.0		µg/L	1	11/14/2013 2:26:21 AM	R1476(
Ethylbenzene	ND	1.0		µg/L	1	11/14/2013 2:26:21 AM	R1476(
Xylenes, Total	ND	2.0		µg/L	1	11/14/2013 2:26:21 AM	R1476(
Surr: 4-Bromofluorobenzene	103	85-136		%REC	1	11/14/2013 2:26:21 AM	R1476(

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311460**

15-Nov-13

Client: Animas Environmental Services

Project: Energen Julander #1E

Sample ID	5ML RB	SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	PBW	Batch ID:	R14766		RunNo:	14766				
Prep Date:		Analysis Date:	11/13/2013		SeqNo:	425689	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		101	85	136			

Sample ID	100NG BTEX LCS	SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	LCSW	Batch ID:	R14766		RunNo:	14766				
Prep Date:		Analysis Date:	11/13/2013		SeqNo:	425690	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.2	80	120			
Toluene	19	1.0	20.00	0	96.2	80	120			
Ethylbenzene	19	1.0	20.00	0	95.6	80	120			
Xylenes, Total	59	2.0	60.00	0	98.0	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		105	85	136			

Sample ID	5ML RB	SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	PBW	Batch ID:	R14824		RunNo:	14824				
Prep Date:		Analysis Date:	11/14/2013		SeqNo:	427266	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	20		20.00		98.5	85	136			

Sample ID	100NG BTEX LCS	SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	LCSW	Batch ID:	R14824		RunNo:	14824				
Prep Date:		Analysis Date:	11/14/2013		SeqNo:	427268	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	18	1.0	20.00	0	91.9	80	120			
Toluene	18	1.0	20.00	0	92.3	80	120			
Ethylbenzene	18	1.0	20.00	0	90.5	80	120			
Xylenes, Total	55	2.0	60.00	0	92.3	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		103	85	136			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1311460 RcptNo: 1

Received by/date: 11/12/13

Logged By: Lindsay Mangin 11/12/2013 10:00:00 AM

Completed By: Lindsay Mangin 11/12/2013 1:24:23 PM

Reviewed By: 11/12/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Animas Environmental Services	☒ Standard ☐ Rush
Mailing Address: 624 E Comanche Farmington, NM 87401	Project Name: Energen Jylander #1E
Phone #: 505-564-2281	Project #:
email or Fax#:	Project Manager: H. Woods
QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)	Sampler: CL/DR
Accreditation ☐ NELAP ☐ Other	On Ice: ☒ Yes ☐ No
☐ EDD (Type)	Sample Temperature: 4.0

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1311-1690	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
11-11-13	1320	H_2O	MW-1	3-40mL glass	HCl	-001	X											
	1524		MW-2		HCl	-002	X											
	1425		MW-3		HCl	-003	X											
	1354		MW-4		HCl	-004	X											
	1106		MW-5		HCl	-005	X											
	1027		MW-6		HCl	-006	X											
	1234		MW-7		HCl	-007	X											
	1149		MW-8		HCl	-008	X											
		H_2O	Trip Blanks	2-40mL glass	HCl	-009	X											

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/13	1714	Dani Reese	Christy Walter	11/11/13	1714
11/13	1740	Christy Walter		11/12/13	1000

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 22, 2013

Heather Woods
Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 716-2787
FAX (505) 324-2022

RE: Energen Julander Fed #1E OrderNo.: 1311677

Dear Heather Woods:

Hall Environmental Analysis Laboratory received 5 sample(s) on 11/15/2013 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1311677**
Date Reported: **11/22/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-1
Project: Energen Julander Fed #1E
Collection Date: 11/14/2013 11:19:00 AM
Lab ID: 1311677-001 **Matrix:** AQUEOUS **Received Date:** 11/15/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	10		µg/L	10	11/19/2013 8:44:14 PM	R14894
Toluene	85	10		µg/L	10	11/19/2013 8:44:14 PM	R14894
Ethylbenzene	220	10		µg/L	10	11/19/2013 8:44:14 PM	R14894
Xylenes, Total	2300	100		µg/L	50	11/19/2013 8:14:05 PM	R14894
Surr: 4-Bromofluorobenzene	116	85-136		%REC	10	11/19/2013 8:44:14 PM	R14894

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-3
Project: Energen Julander Fed #1E
Collection Date: 11/14/2013 11:45:00 AM
Lab ID: 1311677-002 **Matrix:** AQUEOUS **Received Date:** 11/15/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	1500	20		µg/L	20	11/20/2013 1:37:57 PM	R14955
Toluene	280	20		µg/L	20	11/20/2013 1:37:57 PM	R14955
Ethylbenzene	54	20		µg/L	20	11/20/2013 1:37:57 PM	R14955
Xylenes, Total	550	40		µg/L	20	11/20/2013 1:37:57 PM	R14955
Surr: 4-Bromofluorobenzene	107	85-136		%REC	20	11/20/2013 1:37:57 PM	R14955

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-4
Project: Energen Julander Fed #1E
Collection Date: 11/14/2013 12:14:00 PM
Lab ID: 1311677-003
Matrix: AQUEOUS
Received Date: 11/15/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**	
Benzene	ND	5.0		µg/L	5	11/20/2013 2:08:10 PM	R14955
Toluene	140	5.0		µg/L	5	11/20/2013 2:08:10 PM	R14955
Ethylbenzene	350	5.0		µg/L	5	11/20/2013 2:08:10 PM	R14955
Xylenes, Total	3500	100		µg/L	50	11/20/2013 4:09:20 PM	R14955
Surr: 4-Bromofluorobenzene	130	85-136		%REC	5	11/20/2013 2:08:10 PM	R14955

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: TRIP BLANK
Project: Energen Julander Fed #1E
Collection Date: 11/14/2013
Lab ID: 1311677-004
Matrix: TRIP BLANK
Received Date: 11/15/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	1.0		µg/L	1	11/20/2013 1:48:14 AM	R14894
Toluene	ND	1.0		µg/L	1	11/20/2013 1:48:14 AM	R14894
Ethylbenzene	ND	1.0		µg/L	1	11/20/2013 1:48:14 AM	R14894
Xylenes, Total	ND	2.0		µg/L	1	11/20/2013 1:48:14 AM	R14894
Surr: 4-Bromofluorobenzene	96.4	85-136		%REC	1	11/20/2013 1:48:14 AM	R14894

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander Fed #1E
Lab ID: 1311677-005 **Matrix:** AIR

Client Sample ID: Well Gas MW-1, 3, & 4
Collection Date: 11/14/2013 10:11:00 AM
Received Date: 11/15/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.18	0.10		µg/L	1	11/18/2013 10:53:01 AM	R14877
Toluene	0.51	0.10		µg/L	1	11/18/2013 10:53:01 AM	R14877
Ethylbenzene	0.36	0.10		µg/L	1	11/18/2013 10:53:01 AM	R14877
Xylenes, Total	2.3	0.20		µg/L	1	11/18/2013 10:53:01 AM	R14877
Surr: 4-Bromofluorobenzene	112	75.4-151		%REC	1	11/18/2013 10:53:01 AM	R14877

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
E	Value above quantitation range
J	Analyte detected below quantitation limits
O	RSD is greater than RSDlimit
R	RPD outside accepted recovery limits
S	Spike Recovery outside accepted recovery limits
B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
P	Sample pH greater than 2 for VOA and TOC only.
RL	Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311677**

22-Nov-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID **1311677-005ADUP** SampType: **DUP** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **Well Gas MW-1, 3,** Batch ID: **R14877** RunNo: **14877**

Prep Date: Analysis Date: **11/18/2013** SeqNo: **428944** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.18	0.10						2.48	20	
Toluene	0.59	0.10						14.0	20	
Ethylbenzene	0.37	0.10						2.56	20	
Xylenes, Total	2.3	0.20						0.416	20	
Surr: 4-Bromofluorobenzene	2.2		2.000		112	75.4	151	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311677**

22-Nov-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R14877**	RunNo: **14877**
Prep Date:	Analysis Date: **11/18/2013**	SeqNo: **428941** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
Surr: 4-Bromofluorobenzene	20		20.00		101	85	136			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R14877**	RunNo: **14877**
Prep Date:	Analysis Date: **11/18/2013**	SeqNo: **428942** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	95.3	80	120			
Toluene	19	1.0	20.00	0	95.9	80	120			
Ethylbenzene	19	1.0	20.00	0	95.4	80	120			
Xylenes, Total	58	2.0	60.00	0	97.4	80	120			
1,2,4-Trimethylbenzene	19	1.0	20.00	0	94.8	80	120			
1,3,5-Trimethylbenzene	20	1.0	20.00	0	98.2	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		105	85	136			

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R14894**	RunNo: **14894**
Prep Date:	Analysis Date: **11/19/2013**	SeqNo: **430248** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	22		20.00		110	85	136			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R14894**	RunNo: **14894**
Prep Date:	Analysis Date: **11/19/2013**	SeqNo: **430252** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	86.0	80	120			
Toluene	18	1.0	20.00	0	88.2	80	120			
Ethylbenzene	18	1.0	20.00	0	89.1	80	120			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311677**

22-Nov-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID	100NG BTEX LCS	SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	LCSW	Batch ID:	R14894		RunNo:	14894				
Prep Date:		Analysis Date:	11/19/2013		SeqNo:	430252	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Xylenes, Total	57	2.0	60.00	0	94.6	80	120			
Surr: 4-Bromofluorobenzene	21		20.00		106	85	136			

Sample ID	1311677-001AMS	SampType:	MS		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	MW-1	Batch ID:	R14894		RunNo:	14894				
Prep Date:		Analysis Date:	11/19/2013		SeqNo:	430255	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	190	10	200.0	0	93.0	73.4	119			
Toluene	260	10	200.0	85.02	89.3	80	120			
Ethylbenzene	380	10	200.0	216.3	84.2	80	120			
Surr: 4-Bromofluorobenzene	230		200.0		116	85	136			

Sample ID	1311677-001AMSD	SampType:	MSD		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	MW-1	Batch ID:	R14894		RunNo:	14894				
Prep Date:		Analysis Date:	11/19/2013		SeqNo:	430256	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	190	10	200.0	0	93.3	73.4	119	0.333	20	
Toluene	270	10	200.0	85.02	90.8	80	120	1.09	20	
Ethylbenzene	380	10	200.0	216.3	82.2	80	120	1.04	20	
Surr: 4-Bromofluorobenzene	230		200.0		117	85	136	0	0	

Sample ID	100NG BTEX LCS	SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	LCSW	Batch ID:	R14955		RunNo:	14955				
Prep Date:		Analysis Date:	11/20/2013		SeqNo:	431606	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	93.9	80	120			
Toluene	19	1.0	20.00	0	94.9	80	120			
Ethylbenzene	19	1.0	20.00	0	94.6	80	120			
Xylenes, Total	59	2.0	60.00	0	97.8	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		108	85	136			

Sample ID	5ML-RB	SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	PBW	Batch ID:	R14955		RunNo:	14955				
Prep Date:		Analysis Date:	11/20/2013		SeqNo:	431612	Units:	µg/L		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311677**

22-Nov-13

Client: Animas Environmental Services

Project: Energen Julander Fed #1E

Sample ID **5ML-RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R14955**	RunNo: **14955**
Prep Date:	Analysis Date: **11/20/2013**	SeqNo: **431612** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		107	85	136			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **Animas Environmental** Work Order Number: **1311677** RcptNo: **1**

Received by/date: RM 11/15/2013

Logged By: **Ashley Gallegos** 11/15/2013 10:00:00 AM AG

Completed By: **Ashley Gallegos** 11/15/2013 12:56:52 PM AG

Reviewed By: IO 11/15/13

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ✔
2. Is Chain of Custody complete?	Yes ✔	No ☐	Not Present ☐
3. How was the sample delivered?	Courier		

Log In

4. Was an attempt made to cool the samples?	Yes ✔	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ✔	No ☐	NA
6. Sample(s) in proper container(s)?	Yes ✔	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ✔	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ✔	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ✔	NA ☐
10. VOA vials have zero headspace?	Yes ✔	No ☐	No VOA Vials
11. Were any sample containers received broken?	Yes ☐	No ✔	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ✔	No ☐	Adjusted?
13. Are matrices correctly identified on Chain of Custody?	Yes ✔	No ☐	
14. Is it clear what analyses were requested?	Yes ✔	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ✔	No ☐	Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ✔

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: Animas Environmental Services

Mailing Address: 624 E. Comanche Farmington NM 87401

Phone #: 505-564-2281

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☒ Standard ☐ Rush _____

Project Name: Energen Julander Fed #1E

Project #:

Project Manager: H. Woods

Sampler: CL

On Ice: ☒ Yes ☐ No

Sample Temperature: 4.3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)				Air Bubbles (Y or N)
11-14-13	1119	H_2O	MW-1	3-40ml glass	HCl	-001	X														
↓	1145	↓	MW-3	↓	↓	-002	X														
↓	1214	↓	MW-4	↓	↓	-003	X														
11-14-13		H_2O	Trip Blanks (2)	2-40ml glass	HCl	-004	X														
11-14-13	1011	Air	Well Gas MM1, 2, 4 per Heather Woods 11/18/2013	2-1L bags	—	-005	X														

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/14/13	1638		Christine Walter	11/14/13	1638
11/14/13	1715	Christine Walter		11/15/13	1000

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 18, 2014

Heather Woods
Animas Environmental Services
624 East Comanche
Farmington, NM 87401
TEL: (505) 716-2787
FAX

RE: Energen Julander Federal #1E OrderNo.: 1402362

Dear Heather Woods:

Hall Environmental Analysis Laboratory received 9 sample(s) on 2/11/2014 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1402362**
Date Reported: **2/18/2014**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Project: Energen Julander Federal #1E
Lab ID: 1402362-001 **Matrix:** AQUEOUS

Client Sample ID: MW-1
Collection Date: 2/10/2014 1:37:00 PM
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	ND	5.0		µg/L	5	2/13/2014 1:24:12 PM	R16743
Toluene	42	5.0		µg/L	5	2/13/2014 1:24:12 PM	R16743
Ethylbenzene	470	50		µg/L	50	2/13/2014 12:53:54 PM	R16743
Xylenes, Total	4100	100		µg/L	50	2/13/2014 12:53:54 PM	R16743
Surr: 4-Bromofluorobenzene	127	85-136		%REC	5	2/13/2014 1:24:12 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-2
Project: Energen Julander Federal #1E
Collection Date: 2/10/2014 3:21:00 PM
Lab ID: 1402362-002
Matrix: AQUEOUS
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	ND	1.0		µg/L	1	2/13/2014 3:25:08 PM	R16743
Toluene	ND	1.0		µg/L	1	2/13/2014 3:25:08 PM	R16743
Ethylbenzene	ND	1.0		µg/L	1	2/13/2014 3:25:08 PM	R16743
Xylenes, Total	ND	2.0		µg/L	1	2/13/2014 3:25:08 PM	R16743
Surr: 4-Bromofluorobenzene	102	85-136		%REC	1	2/13/2014 3:25:08 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-3
Project: Energen Julander Federal #1E
Collection Date: 2/10/2014 2:47:00 PM
Lab ID: 1402362-003
Matrix: AQUEOUS
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	9100	500		µg/L	500	2/14/2014 1:23:16 PM	R16771
Toluene	8800	500		µg/L	500	2/14/2014 1:23:16 PM	R16771
Ethylbenzene	670	50		µg/L	50	2/13/2014 3:55:17 PM	R16743
Xylenes, Total	5300	100		µg/L	50	2/13/2014 3:55:17 PM	R16743
Surr: 4-Bromofluorobenzene	115	85-136		%REC	50	2/13/2014 3:55:17 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-4
Project: Energen Julander Federal #1E
Collection Date: 2/10/2014 2:09:00 PM
Lab ID: 1402362-004
Matrix: AQUEOUS
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	1300	50		µg/L	50	2/14/2014 1:53:21 PM	R16771
Toluene	1100	50		µg/L	50	2/14/2014 1:53:21 PM	R16771
Ethylbenzene	150	5.0		µg/L	5	2/13/2014 4:25:34 PM	R16743
Xylenes, Total	1300	100		µg/L	50	2/14/2014 1:53:21 PM	R16771
Surr: 4-Bromofluorobenzene	127	85-136		%REC	5	2/13/2014 4:25:34 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-5
Project: Energen Julander Federal #1E
Collection Date: 2/10/2014 11:43:00 AM
Lab ID: 1402362-005
Matrix: AQUEOUS
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	1.1	1.0		µg/L	1	2/13/2014 4:55:49 PM	R16743
Toluene	ND	1.0		µg/L	1	2/13/2014 4:55:49 PM	R16743
Ethylbenzene	ND	1.0		µg/L	1	2/13/2014 4:55:49 PM	R16743
Xylenes, Total	110	2.0		µg/L	1	2/13/2014 4:55:49 PM	R16743
Surr: 4-Bromofluorobenzene	89.4	85-136		%REC	1	2/13/2014 4:55:49 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-6
Project: Energen Julander Federal #1E
Collection Date: 2/10/2014 9:48:00 AM
Lab ID: 1402362-006
Matrix: AQUEOUS
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	ND	1.0		µg/L	1	2/13/2014 5:25:57 PM	R16743
Toluene	ND	1.0		µg/L	1	2/13/2014 5:25:57 PM	R16743
Ethylbenzene	ND	1.0		µg/L	1	2/13/2014 5:25:57 PM	R16743
Xylenes, Total	ND	2.0		µg/L	1	2/13/2014 5:25:57 PM	R16743
Surr: 4-Bromofluorobenzene	103	85-136		%REC	1	2/13/2014 5:25:57 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-7
Project: Energen Julander Federal #1E
Collection Date: 2/10/2014 12:26:00 PM
Lab ID: 1402362-007
Matrix: AQUEOUS
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	14	5.0		µg/L	5	2/13/2014 5:56:04 PM	R16743
Toluene	870	50		µg/L	50	2/14/2014 2:23:24 PM	R16771
Ethylbenzene	200	5.0		µg/L	5	2/13/2014 5:56:04 PM	R16743
Xylenes, Total	1600	100		µg/L	50	2/14/2014 2:23:24 PM	R16771
Surr: 4-Bromofluorobenzene	129	85-136		%REC	5	2/13/2014 5:56:04 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: MW-8
Project: Energen Julander Federal #1E
Collection Date: 2/10/2014 10:41:00 AM
Lab ID: 1402362-008 **Matrix:** AQUEOUS **Received Date:** 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	ND	1.0		µg/L	1	2/13/2014 6:56:29 PM	R16743
Toluene	ND	1.0		µg/L	1	2/13/2014 6:56:29 PM	R16743
Ethylbenzene	ND	1.0		µg/L	1	2/13/2014 6:56:29 PM	R16743
Xylenes, Total	ND	2.0		µg/L	1	2/13/2014 6:56:29 PM	R16743
Surr: 4-Bromofluorobenzene	101	85-136		%REC	1	2/13/2014 6:56:29 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental Services
Client Sample ID: Trip Blank
Project: Energen Julander Federal #1E
Collection Date:
Lab ID: 1402362-009
Matrix: TRIP BLANK
Received Date: 2/11/2014 10:04:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8021B: VOLATILES						Analyst: **JMP**	
Benzene	ND	1.0		µg/L	1	2/13/2014 7:26:51 PM	R16743
Toluene	ND	1.0		µg/L	1	2/13/2014 7:26:51 PM	R16743
Ethylbenzene	ND	1.0		µg/L	1	2/13/2014 7:26:51 PM	R16743
Xylenes, Total	ND	2.0		µg/L	1	2/13/2014 7:26:51 PM	R16743
Surr: 4-Bromofluorobenzene	100	85-136		%REC	1	2/13/2014 7:26:51 PM	R16743

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402362**

18-Feb-14

Client: Animas Environmental Services

Project: Energen Julander Federal #1E

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R16743**	RunNo: **16743**
Prep Date:	Analysis Date: **2/13/2014**	SeqNo: **481947** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		107	85	136			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R16743**	RunNo: **16743**
Prep Date:	Analysis Date: **2/13/2014**	SeqNo: **481948** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	105	80	120			
Toluene	21	1.0	20.00	0	106	80	120			
Ethylbenzene	21	1.0	20.00	0	105	80	120			
Xylenes, Total	64	2.0	60.00	0	107	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		112	85	136			

Sample ID **1402362-001AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-1**	Batch ID: **R16743**	RunNo: **16743**
Prep Date:	Analysis Date: **2/13/2014**	SeqNo: **481951** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	110	5.0	100.0	0	108	71	129			
Toluene	150	5.0	100.0	41.78	112	68.4	135			
Ethylbenzene	640	5.0	100.0	506.9	136	69.4	135			ES
Xylenes, Total	4100	10	300.0	3662	133	72.4	135			E
Surr: 4-Bromofluorobenzene	150		100.0		147	85	136			S

Sample ID **1402362-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **MW-1**	Batch ID: **R16743**	RunNo: **16743**
Prep Date:	Analysis Date: **2/13/2014**	SeqNo: **481952** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	100	5.0	100.0	0	105	71	129	3.32	20	
Toluene	150	5.0	100.0	41.78	109	68.4	135	1.83	20	
Ethylbenzene	640	5.0	100.0	506.9	129	69.4	135	0.990	20	E
Xylenes, Total	4000	10	300.0	3662	125	72.4	135	0.603	20	E
Surr: 4-Bromofluorobenzene	150		100.0		148	85	136	0	0	S

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1402362**

18-Feb-14

Client: Animas Environmental Services

Project: Energen Julander Federal #1E

Sample ID **5ML RB**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBW**	Batch ID: **R16771**	RunNo: **16771**
Prep Date:	Analysis Date: **2/14/2014**	SeqNo: **482806** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Xylenes, Total	ND	2.0								
Surr: 4-Bromofluorobenzene	21		20.00		105	85	136			

Sample ID **100NG BTEX LCS**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSW**	Batch ID: **R16771**	RunNo: **16771**
Prep Date:	Analysis Date: **2/14/2014**	SeqNo: **482807** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	98.4	80	120			
Toluene	20	1.0	20.00	0	98.2	80	120			
Xylenes, Total	61	2.0	60.00	0	101	80	120			
Surr: 4-Bromofluorobenzene	22		20.00		108	85	136			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2.
- RL Reporting Detection Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Animas Environmental Work Order Number: 1402362 RcptNo: 1

Received by/date: AG 02/11/14

Logged By: Lindsay Mangin 2/11/2014 10:04:00 AM

Completed By: Lindsay Mangin 2/11/2014 10:45:29 AM

Reviewed By: AS 02/11/14

Chain of Custody

1. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
2. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
3. How was the sample delivered?	UPS		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.9	Good	Yes			

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Animas Environmental Services	☒ Standard ☐ Rush
Mailing Address: 624 E. Comanche Farmington NM 87401	Project Name: Energen Inlander Federal #1E
Phone #: 505-564-2281	Project #:
email or Fax#:	Project Manager: H. Woods
QA/QC Package: ☒ Standard ☐ Level 4 (Full Validation)	Sampler: C. Lanemon/S. Glasses
Accreditation ☐ NELAP ☐ Other	On Ice: ☒ Yes ☐ No
☐ EDD (Type)	Sample Temperature: 1.9

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1402302	BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
2/10/14	1337	H_2O	MW-1	3-40ml VOA	HCl	-001	X															
	1521		MW-2			-002	X															
	1447		MW-3			-003	X															
	1409		MW-4			-004	X															
	1143		MW-5			-005	X															
	0948		MW-6			-006	X															
	1226		MW-7			-007	X															
↓	1041	↓	MW-8	↓	↓	-008	X															
		=	Trip Blank	2-40mL VOAs	HCl	-009	X															

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	1710			2/10/14	1710
Date:	Time:	Relinquished by:	Received by:	Date	Time
2/10/14	1730			02/11/14	1004

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Sampling
Site: Julander FED #1E
Location:
Tech: L. Lamm

Project No.:
Date: 5-3-2013
Time: 0830
Form:

Well I.D.	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
1		41.89		50.73 TDW 2" well silt
2		38.60		42.31 TDW - 1" well
3		40.49		48.43 TDW 2" well silt
4		40.21		46.90 TDW 2" well silt

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

Monitor Well Development Record	Animas Environmental Services
Monitor Well No: 2	624 E. Comanche, Farmington NM 87401 Tel. (505) 564-2281 Fax (505) 324-2022

Site: Julander Fed #1E
Location: Energen
Project:
Technician(s): L.L.
Well Diameter (in): 1"
Initial D.T.W. (ft): 38.60 Time: (taken at initial gauging of all wells)
Final D.T.W. (ft): 39.20 Time: (taken after development of well)
If NAPL Present: D.T.P.: D.T.W.: Thickness: Time:
Development Method:

Project No.:
Date: 5-3-2013
Arrival Time: 1323
Air Temp:
Total Well Depth (ft): 42.31 / 42.28

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (mS)	pH	DO mg/L	Purged Volume (gallons)	Notes/Observations (color, clarity, and odor)
1345	17.92	1.039	7.29	3.27	1st Few Bailers	Dark Brown H2O
1420	19.68	1.046	7.30	3.45	1/2 Bgal.	Lt Tan H2O
1512	18.85	0.558	7.46	3.42	1 gal	Clear

Analytical Parameters (include analysis method and number and type of sample containers)

Disposal of Purged Water: PER Energen, into pit tank on site
Collected Samples Stored on Ice in Cooler: N/A
Chain of Custody Record Complete: N/A
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: 1" well, Well recovery is slow to none Bailer refusal after 1 gal purge.

revised: 08/10/09

Monitor Well Development Record

Monitor Well No: 3

Animas Environmental Services

624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Julander FED 1E
Location: Energen
Project:
Technician(s): L.L.
Well Diameter (in): 2"
Initial D.T.W. (ft): 40.49 **Time:** 0920
Final D.T.W. (ft): 41.59 **Time:** 1115
If NAPL Present: D.T.P.: D.T.W.: Thickness: Time:
Development Method: Surging & Bailing

Project No.:
Date: 5-3-2013
Arrival Time: 0939
Air Temp: 48°F
Total Well Depth (ft): 48.43 / 46.54
(taken at initial gauging of all wells)
(taken after development of well)

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (mS)	pH	DO mg/L	Purged Volume (gallons)	Notes/Observations (color, clarity, and odor)
0955	14.65	1.465	6.42	[redacted]	1.0	silt, brown w/ PVC shavings
1006	15.07	1.533	6.63	[redacted]	3.5	silt brown w/ PVC Shavings
1023	15.12	1.534	6.63	[redacted]	6.0	light brown H2O silt
1034	15.23	1.539	6.63	1.97	9.0	light brown H2O some silt
1052	15.14	~~1.560~~	6.76	2.10	13.0	light brown H2O some silt
1100	15.13	1.547	6.69	2.70	15.0	light Tan ... min. silt
1107	15.26	1.554	6.66	2.80	17.0	light Tan min. silt
1115	15.13	1.556	6.67	2.62	20.0	clear

Analytical Parameters (include analysis method and number and type of sample containers)

Disposal of Purged Water: Per Energen -- into pit on site.
Collected Samples Stored on Ice in Cooler: N/A
Chain of Custody Record Complete: N/A
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

7.94 H_2O column
1.30 column w/ 2" well PVC
6.50 (5)

Odor at initial open of well lid product odor... as purging & bailing continued odor was still present, however slight. odor subside @ 13 - 20 gals.

revised: 08/10/09

Monitor Well Development Record

Monitor Well No: 4

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Julander FED 1E
Location: ENERGEN
Project:
Technician(s): LL
Well Diameter (in): 2
Initial D.T.W. (ft): 40.21 **Time:** *(taken at initial gauging of all wells)*
Final D.T.W. (ft): 45.01 **Time:** 1301 *(taken after development of well)*
If NAPL Present: **D.T.P.:** **D.T.W.:** **Thickness:** **Time:**
Development Method:

Project No.:
Date: 5.3.2013
Arrival Time: 1130
Air Temp: 50° F
Total Well Depth (ft): 46.90 / 47.84

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (mS)	pH	DO mg/L	Purged Volume (gallons)	Notes/Observations (color, clarity, and odor)
1150	16.20	1.136	7.00	4.82	1.0	Dark brown H2O sheen odor
1210	16.51	1.208	6.94	4.17	4.0	Dark brown H2O shavings
1226	16.91	1.131	7.01	4.42	7.0	odor / sheen. brown H2O
1238	16.50	1.120	6.97	4.24	10.0	Lt. Tan H2O some sheen
1252	16.54	1.102	6.95	4.08	13.0	Lt Tan - Clearing up
1305	16.51	1.103	6.97	3.95	15.0	Clear

Analytical Parameters (include analysis method and number and type of sample containers)

Disposal of Purged Water: PER ENERGEN, into pit TANK on site
Collected Samples Stored on Ice in Cooler: N/A
Chain of Custody Record Complete: N/A
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:
6.61 H2O column
1.09 volume

well was slow to recover during purging
H2O had sheen, odor, PVC shavings from 1st bailer
to 8 gals. H2O clearing @ 9 - 15 gals.

revised: 08/10/09

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Monitoring
Site: Energen Julander Fed #1E
Location: B
Tech: L. Lamanf

Project No.:
Date: 5-6-2013
Time: 1040
Form: 1 of 1

Well I.D.	Time	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-1	1042		41.87		50.63 TDW
MW-2			38.98		
MW-3	1100		40.47		46.84
MW-4	1106		40.17		47.84

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-1

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Energen Julander Fed #1E
Location:
Project: Groundwater Monitoring and Sampling
Sampling Technician: L.L.
Purge / No Purge: Purge 3 well volume
Well Diameter (in): 2"
Initial D.T.W. (ft): 41.87 **Time:** ~~5/6/13~~ 1042 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 41.88 **Time:** 1134 *(taken prior to purging well)*
Final D.T.W. (ft): 47.18 **Time:** 1204 *(taken after sample collection)*
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____

Project No.:
Date: 5.6.2013
Arrival Time: [redacted]
Air Temp: 55° F
T.O.C. Elev. (ft):
Total Well Depth (ft): 50.63

1208 Sample

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1147	15.67	1.282	4.30	6.82	-70.1	1st Bailer	Clear H2O
1153	15.09	1.585	2.17	6.90	-85.4	1.5 gal	gray H2O
1200	14.91	1.593	2.70	6.92	-86.1	2.5 gal	gray H2O odor
1208	14.61	0.865	4.80	6.95	-89.6	4.5 gal	gray H2O odor

Analytical Parameters (include analysis method and number and type of sample containers)

Full VOCs per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve) and TPH as GRO/DRO per EPA Method 8015 (2 - 40 mL Vials w/ HCl preserve, 1 - 40 mL Vial Nonpreserve)

Disposal of Purged Water: Per Energen ... into pit tank on site
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:
8.75 Column
1.43 volume
4.50 to be purged

gray H2O, well has silt. slight product odor slight sheen, recovery is a bit slow.

Revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-2

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Energen Julander Fed #1E
Location:
Project: Groundwater Monitoring and Sampling
Sampling Technician: L. Lamonc
Purge / No Purge: Purge
Well Diameter (in): 1"
Initial D.T.W. (ft): 38.48 **Time:** *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 38.42 **Time:** 1405 *(taken prior to purging well)*
Final D.T.W. (ft): 38.90 **Time:** 1502 *(taken after sample collection)*
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____

Project No.:
Date: 5-6-2013
Arrival Time: 1400 1500 sampling
Air Temp: 57° F
T.O.C. Elev. (ft):
Total Well Depth (ft): 42.28

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1451	15.93	1.021	5.32	7.66	-21.5	2 cups	Tan H2o
1500	16.85	0.542	4.22	7.44	-18.6	3 cups	TAN H2O

Analytical Parameters (include analysis method and number and type of sample containers)

Full VOCs per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve) and TPH as GRO/DRO per EPA Method 8015 (2 - 40 mL Vials w/ HCl preserve, 1 - 40 mL Vial Nonpreserve)

Disposal of Purged Water: PER ENERGEN, into pit TANK on site
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:
3.86 H2o Column

~~Revised: 08/10/09~~

MONITORING WELL SAMPLING RECORD	Animas Environmental Services
Monitor Well No: MW-3	624 E. Comanche, Farmington NM 87401 Tel. (505) 564-2281 Fax (505) 324-2022

Site: Energen Julander Fed #1E
Location:
Project: Groundwater Monitoring and Sampling
Sampling Technician: L. LAMONE
Purge / No Purge: Purge ~~3~~ well volume
Well Diameter (in): 2
Initial D.T.W. (ft): 40.47 **Time:** 11:00 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 40.48 **Time:** 1223 *(taken prior to purging well)*
Final D.T.W. (ft): 41.55 **Time:** 12.41 *(taken after sample collection)*
If NAPL Present: D.T.P.: **D.T.W.:** **Thickness:** **Time:**

Project No.:
Date: 5.6.2013
Arrival Time: 1222 (1244 sample)
Air Temp: 56° F
T.O.C. Elev. (ft):
Total Well Depth (ft): 46.84

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L.)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1229	14.99	1.575	2.86	6.85	-24.7	1st Bailer	clear H2O odor
1233	14.94	1.588	2.24	6.72	-29.3	1.0 gal.	clear H2O
1238	14.88	1.577	2.10	6.70	-27.1	2.0 gal	clear H2O
1244	14.80	1.575	2.06	6.70	-43.5	3.5 gal	clear H2O

Analytical Parameters (include analysis method and number and type of sample containers)

Full VOCs per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve) and TPH as GRO/DRO per EPA Method 8015 (2 - 40 mL Vials w/ HCl preserve, 1 - 40 mL Vial Nonpreserve)

Disposal of Purged Water: PER Energen, into pit tank on site
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:	
6.63 column	H2O clear ... "Frosty" "clean" Slight odor
1.04 volume	No sheen. ~~Slt~~ slight silt.
3.50 gal. to be purged	Recovery good.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-4

Animas Environmental Services

624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Energen Julander Fed #1E
Location:
Project: Groundwater Monitoring and Sampling
Sampling Technician: LAmone, L.
Purge / No Purge: Purge
Well Diameter (in): ~~2~~ 2"
Initial D.T.W. (ft): 40.17 **Time:** 1106 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 40.17 **Time:** 1316 *(taken prior to purging well)*
Final D.T.W. (ft): 42.25 **Time:** 1344 *(taken after sample collection)*
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____

Project No.:
Date: 5.6.2013
Arrival Time: 1313 (1345 sample)
Air Temp: 56° F
T.O.C. Elev. (ft):
Total Well Depth (ft): 47.84

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1323	14.81	1.200	2.34	7.10	-5.0	1st Bailer	Clear H2O
1329	14.78	1.266	2.07	7.03	-9.9	1.0 gal.	Tan H2O "Cloudy"
1334	14.86	1.219	1.92	7.02	-14.3	2.0 gal	Cloudy H2O
1340	14.84	1.150	1.87	7.02	-23.6	3.0 gal	cloudy H2O Strong
1345	14.94	1.123	2.26	7.03	-28.7	3.75 gal	cloudy brn

Analytical Parameters (include analysis method and number and type of sample containers)

Full VOCs per EPA Method 8021 (3 - 40 mL Vials w/ HCl preserve) and TPH as GRO/DRO per EPA Method 8015 (2 - 40 mL Vials w/ HCl preserve, 1 - 40 mL Vial Nonpreserve)

Disposal of Purged Water: Per Energen into pit tank on site
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

7.67
1.25
3.75

~~Revised: 08/10/09~~

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Sampling
Site: Energen Julander Fed #1E
Location:
Tech: L. Lamone

Project No.:
Date: 8.21.2013
Time: 0745
Form:

Well I.D.	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-7		37.19		TDW: 48.53
MW-8		35.43		TDW: 46.97
MW-5		36.08		TDW: 46.13
MW-6		34.58		TDW: 48.30

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

Monitor Well Development Record	Animas Environmental Services
Monitor Well No: 5	624 E. Comanche, Farmington NM 87401 Tel. (505) 564-2281 Fax (505) 324-2022

Site: Energen
Location: Julander FED #1E
Project: Monitoring Well Development
Technician(s): L.L.
Well Diameter (in): 2
Initial D.T.W. (ft): 36.08 Time: _____ (taken at initial gauging of all wells)
Final D.T.W. (ft): 45.28 Time: 1354 (taken after development of well)
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____
Development Method: Bailer

Project No.: .
Date: 8-21-2013
Arrival Time: 1124
Air Temp: _____
Total Well Depth (ft): 46.13

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (mS)	pH		Purged Volume (gallons)	Notes/Observations (color, clarity, and odor)
1130					36.05' H_2O	
					1-17 gals	Dark Brown muddy
						H_2O... PVC shavings
						Bugs... sediments
					17-20-	Tan H_2O
					20-28 gal.	Tan Lt H_2O
					28-31 gal	clear

Analytical Parameters (include analysis method and number and type of sample containers)

Disposal of Purged Water: Tank pit on site
Collected Samples Stored on Ice in Cooler: N/A
Chain of Custody Record Complete: N/A
Analytical Laboratory: ~~Hall Environmental Analysis Laboratory, Albuquerque, NM~~
Equipment Used During Sampling: ~~Keck Water Level or Keek Interface Level, YSI Water Quality Meter and New Disposable Bailer~~ & No Samples

Notes/Comments: 10.08 H_2O column

Monitor Well Development Record	Animas Environmental Services
Monitor Well No: 6	624 E. Comanche, Farmington NM 87401 Tel. (505) 564-2281 Fax (505) 324-2022

Site: Julander Fed #15 — Project No.:
Location: Energen — Date: 8.21.2013
Project: ~~Groundwater~~ Monitory well Development — Arrival Time: 0832
Technician(s): L. Lowe — Air Temp:
Well Diameter (in): 2 — Total Well Depth (ft): 4830
Initial D.T.W. (ft): 34.58 — Time: 0825 — *(taken at initial gauging of all wells)*
Final D.T.W. (ft): 47.75 — Time: 1117 — *(taken after development of well)*
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____
Development Method: Bailer

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (mS)	pH		Purged Volume (gallons)	Notes/Observations (color, clarity, and odor)
					5 gal	DARK Muddy H2O
					10 gal	Tan H2O
					15 gal	Lt Tan
					15-17 gal	Mud coming in bailer w/ H2O
					18 gal.	Silica Sand in bailer... Tan H2O
					28 gal.	lite Tan-Clear H2O w/ some silica SAND
1117					31 gal.	Clear H2O NO sediments.

Analytical Parameters (include analysis method and number and type of sample containers)

Disposal of Purged Water: Into pit tank on site
Collected Samples Stored on Ice in Cooler: N/A
Chain of Custody Record Complete: N/A
Analytical Laboratory: ~~Hall Environmental Analysis Laboratory, Albuquerque, NM~~
Equipment Used During Sampling: ~~Keck Water Level or Keck Interface Level, YSI Water Quality Meter~~ and ~~New Disposable Bailer~~ NO SAMPLES

Notes/Comments: 13.78' of H2O Column

revised: 08/10/09

Monitor Well Development Record	Animas Environmental Services
Monitor Well No: 7	624 E. Comanche, Farmington NM 87401 Tel. (505) 564-2281 Fax (505) 324-2022

Site: Julander Fed #1E **Project No.:**
Location: Energen **Date:** 8-21-2013
Project: Monitoring well development **Arrival Time:** 1724
Technician(s): C. Lanne **Air Temp:** 83°F
Well Diameter (in): 2 **Total Well Depth (ft):** 48.53
Initial D.T.W. (ft): 37.19 **Time:** *(taken at initial gauging of all wells)*
Final D.T.W. (ft): 47.50 **Time:** 1915 *(taken after development of well)*
If NAPL Present: D.T.P.: **D.T.W.:** **Thickness:** **Time:**
Development Method:

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (mS)	pH		Purged Volume (gallons)	Notes/Observations (color, clarity, and odor)
					1-10 gal:	~~Dark~~ Brown H2O
						sheen
					10-15 gal	brown slight sheen
					15-25	tan slight sheen
					25-35	clear. same

Analytical Parameters (include analysis method and number and type of sample containers)

Disposal of Purged Water: Tank Pit on site
Collected Samples Stored on Ice in Cooler: N/A
Chain of Custody Record Complete: N/A
Analytical Laboratory: ~~Hall Environmental Analysis Laboratory, Albuquerque, NM~~
Equipment Used During Sampling: ~~Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer~~ No Sampling

Notes/Comments:
11.34 ft H2O column

revised: 08/10/09

Monitor Well Development Record

Monitor Well No: 8

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: _____ Project No.: _____
Location: Jalander Fed #1E Date: 8-21-2013
Project: Monitor Well Development Arrival Time: _____
Technician(s): L. Lamm Air Temp: Hot 90°F
Well Diameter (in): 2 Total Well Depth (ft): 46.97
Initial D.T.W. (ft): 35.43 Time: _____ (taken at initial gauging of all wells)
Final D.T.W. (ft): 45.21 Time: 1702 (taken after development of well)
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____
Development Method: _____

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (mS)	pH		Purged Volume (gallons)	Notes/Observations (color, clarity, and odor)
					1-15 gal.	Dark brown, sediments
					15-25 gal.	Tan, sediments
					25-35-	Tan, some sediments
					35-40	Lt Tan to clear

Analytical Parameters (include analysis method and number and type of sample containers)

Disposal of Purged Water: Pit tank on site
Collected Samples Stored on Ice in Cooler: w/a
Chain of Custody Record Complete: N/A
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: 11.54 H2O column

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Sampling
Site: Energen Resouces Corporation
Location: Julander Federal #1E
Tech: C. Lamerman

Project No.: AES 130411
Date: 8-23-13
Time: 0915
Form:

Well I.D.	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-1	–	37.50	–	
MW-2	–	34.29	–	
MW-3	–	36.16	–	
MW-4	–	35.93	–	
MW-5	–	36.60	–	
MW-6	–	34.56	–	
MW-7	–	37.11	–	
MW-8	–	35.41	–	

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-1

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lawerman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 37.56 **Time:** 1346 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: **D.T.P.:** _____ **D.T.W.:** _____ **Thickness:** _____ **Time:** _____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 1344
Air Temp: 86°F
T.O.C. Elev. (ft): 5444.89
Total Well Depth (ft): 49.75

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1354	16.14	1.692	1.85	7.00	-114.0	0.25	Clear / organic odor
1359	15.53	1.693	0.82	6.84	-96.6	1	Sl. Gy / HBm / organic odor
1402	15.10	1.677	1.39	6.87	-96.0	2	"
1405	14.87	1.673	1.01	6.82	-80.7	3	"
1408	15.11	1.660	0.73	6.83	-83.5	4	Sed / Gray / organic odor
1411	15.04	1.661	0.80	6.84	-82.6	5	Sed / SlDk Gray / organic odor
1416	15.10	1.661	1.03	6.86	-44.9	6	"
1425	—	—	—	—	—	—	Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

Bring Back

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-2

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lameman
Purge / No Purge: Purge
Well Diameter (in): 1
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 34.29 **Time:** 0935 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: **D.T.P.:** ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 0930
Air Temp: 75°F
T.O.C. Elev. (ft): 5441.51
Total Well Depth (ft): 0 42.30

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1001	18.06	1.058	2.00	7.54	4.0	1/16	Clear No Odor
1008	16.12	1.109	2.95 Final	7.39	89.3	0.25	"
1018	16.77	1.114	3.69	7.22	59.4	0.5	"
1026	16.52	1.126	4.36	7.20	72.8	0.75	"
1036	16.34	1.124	3.69	7.19	52.5	1	"
1042							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-3

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lamemam
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 316.16 **Time:** 1424 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: **D.T.P.:** ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 1622
Air Temp: 90°F
T.O.C. Elev. (ft): 5443.47
Total Well Depth (ft): 46.52

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1639	15.63	1.742	0.56	6.81	-89.1	0.25	Clear/Sl. Odor
1643	15.08	1.772	0.95	6.67	-62.4	1	Sl. Gray/ Sl. Odor
1646	14.99	1.777	0.78	6.61	-55.7	2	"
1651	14.49	1.787	0.71	6.60	-55.0	3	Sl Brown/ Sl. Odor
1700	14.48	1.797	0.93	6.63	-50.6	4	"
1709	14.79	1.783	1.33	6.76	-48.7	5	"
1905							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-4

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lauerman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 35.93 **Time:** 1538 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: D.T.P.: ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 1535
Air Temp: 90°F
T.O.C. Elev. (ft): 5443.2
Total Well Depth (ft): 47.80

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1340	16.36	1.388	1.00	7.12	-93.0	0.25	slight odor, clear
1344	15.84	1.450	0.95	6.93	-70.0	1	lt brown, odor
1348	15.48	1.442	0.67	6.85	-67.6	2	lt. brown, sl. odor
1353	15.40	1.445	1.00	6.82	-62.0	3	lt brown, sl. odor sheen
1357	15.26	1.438	0.98	6.80	-58.8	4	"
1601	15.51	1.460	1.57	6.80	-55.4	5	"
1604	15.30	1.409	1.09	6.80	-63.0	6	"
1609							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-5

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lameman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 36.60 **Time:** 1242 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: D.T.P.: _____ **D.T.W.:** _____ **Thickness:** _____ **Time:** _____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 1235
Air Temp: 85°F
T.O.C. Elev. (ft): _____
Total Well Depth (ft): 46'

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1302	16.03	1.684	2.53	6.95	109.2	0.25	Clear/No Odor
1308	15.56	1.669	4.34	6.90	108.0	1	Sl. Hy. Brn/ No Odor
1311	15.14	1.652	4.80	6.92	105.9	2	"
1314	14.67	1.656	5.04	6.93	108.2	3	"
1319	15.23	1.659	4.04	6.87	108.3	4	"
1322	15.14	1.686	2.70	6.82	113.2	5	"
1325							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-6

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lameman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 34.56 **Time:** 1142 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: D.T.P.: _____ **D.T.W.:** _____ **Thickness:** _____ **Time:** _____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 1139
Air Temp: 85°F
T.O.C. Elev. (ft): _____
Total Well Depth (ft): 50'

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1201	16.03	1.682	6.31	7.26	90.2	0.25	Clear
1206	15.17	1.697	6.49	7.13	97.5	1	Sed/Hbon/No Odor
1210	15.64	1.662	6.17	7.05	104.1	2	"
1214	15.47	1.670	6.30	7.05	106.0	3	"
1218	15.72	1.648	5.64	7.02	106.8	4	"
1223	15.63	1.638	6.01	7.07	103.5	5	"
1227	15.58	1.648	6.42	7.05	107.8	6	"
1230	15.32	1.634	6.59	7.07	108.9	7	"
1233	15.54	1.638	6.19	7.01	108.8	7.5	"
1238							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-7

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C Lameman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 37.14 **Time:** 1438 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 1437
Air Temp: 90°F
T.O.C. Elev. (ft): _____
Total Well Depth (ft): 48.10'

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1457	15.95	1.368	0.57	7.28	10.4	0.25	Clear/Sl. odor
1500	16:77	1,381	1.09	7.04	26.7	1	Lt BRN/ [redacted] "
1504	15.87	1.388	1.23	6.95	34.5	2	Lt BRN/ Sl. odor
1509	15.93	1.354	1.56	7.03	20.2	3	"
1513	15.37	1.371	1.43	7.01	22.5	4	Gray / Sl. odor
1515	15.80	1.356	1.54	7.02	11.5	5	"
1518	15.64	1.337	1.06	7.06	-3.6	5.25	"
1524	~						Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-8

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C Lameman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 35.41 **Time:** 1045 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: **D.T.P.:** ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 8-23-13
Arrival Time: 1044
Air Temp: 80°F
T.O.C. Elev. (ft): ____
Total Well Depth (ft): 47.25

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1104	16.49	1.240	6.70	7.80	77.1	0.25	Clear/No Odor
1109	16.24	1.216	6.98	7.56	85.2	1	Lt Brn/Slight No odor
1115	16.11	1.253	5.49	7.37	81.0	2	"
1120	16.28	1.247	5.82	7.35	79.4	3	"
1124	16.93	1.250	5.71	7.34	78.8	4	"
1130	16.07	1.262	5.09	7.28	79.7	5	"
1134	16.13	1.261	5.18	7.29	89.4	5.75	"
1138							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Sampling
Site: Energen Resouces Corporation
Location: Julander Federal #1E
Tech: CL/DR

Project No.: AES 130411
Date: 11/11/13
Time: 9:33
Form:

Well I.D.	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-1		36.97		
MW-2		33.35		possible root blockage
MW-3		35.53		possible sheen
MW-4		35.20		
MW-5		35.44		
MW-6		33.84		
MW-7		36.42		
MW-8		34.31		

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-1

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/DR
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 36.97 **Time:** 12:43 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): **Time:** *(taken prior to purging well)*
Final D.T.W. (ft): **Time:** *(taken after sample collection)*
If NAPL Present: D.T.P.: D.T.W.: Thickness: Time:

Project No.: AES 130411
Date: 11/14/13
Arrival Time: ~~58°~~ 12:41
Air Temp: 58°
T.O.C. Elev. (ft): 5444.89
Total Well Depth (ft): 50.80

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
12:47	13.75	-0.30	13.56	6.79	-80.9	¼ gal	clear, odor
12:51	13.67	-0.31	12.17	6.76	-77.5	1 gal	milky, slight odor
12:55	13.82	-0.31	11.96	6.72	-77.3	2 gal	↓
12:58	14.06	-0.30	12.28	6.76	-74.4	3 gal	↓
13:00	13.84	-0.30	12.16	6.74	-72.7	4 gal	slight grey, cloudy, odor
13:04	13.86	-0.30	12.81	6.80	-69.6	5 gal	grey, cloudy, strong odor
13:08	13.73	-0.30	12.30	6.84	-67.8	6 gal	↓
13:15	13.69	-0.29	16.80	6.80	-47.3	7 gal	↓
13:20							sample

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler:
Chain of Custody Record Complete:
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: conductivity probe malfunctioning

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-2

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/DR
Purge / No Purge: Purge
Well Diameter (in): 1
Initial D.T.W. (ft): 33.35 **Time:** 14:58 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): _____ **Time:** _____ *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: **D.T.P.:** _____ **D.T.W.:** _____ **Thickness:** _____ **Time:** _____

Project No.: AES 130411
Date: 11/11/13
Arrival Time: 14:57
Air Temp: 62°
T.O.C. Elev. (ft): 5441.51
Total Well Depth (ft): ~~0~~ 39.14

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
15:07	14.08	-0.19	36.29	7.40	2.1	1/8 gal	clear, no odor
15:10	14.02	-0.19	29.02	7.14	20.8	1/4 gal	↓
15:16	14.05	-0.19	25.15	7.02	41.6	1/2 gal	
15:19	13.46	-0.19	24.79	6.97	65.9	3/4 gal	↓
15:24	→	→	→	→	→	→	sample

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: _____
Chain of Custody Record Complete: _____
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: conductivity probe malfunctioning
possible root blockage

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-3

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: cL/DR
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 35.58 **Time:** 13:59 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): **Time:** *(taken prior to purging well)*
Final D.T.W. (ft): **Time:** *(taken after sample collection)*
If NAPL Present: D.T.P.: D.T.W.: Thickness: Time:

Project No.: AES 130411
Date: 11/11/13
Arrival Time: 13:57
Air Temp: 62°
T.O.C. Elev. (ft): 5443.47
Total Well Depth (ft): 46.53

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
14:04	14.16	-0.44	15.06	6.48	17.0	¼ gal	clear, ~~with~~ odor
14:06	13.94	-0.44	14.17	6.52	4.4	1 gal	light tan, slight odor
14:10	13.78	-0.44	11.87	6.52	2.7	2 gal	↓
14:13	13.69	-0.44	10.91	6.51	3.4	3 gal	↓
14:16	13.74	-0.44	11.01	6.53	0.1	4 gal	↓
14:20	13.73	-0.44	10.86	6.52	2.1	5 gal	↓
(14:25	—	—	—	—	—	—	sample

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler:
Chain of Custody Record Complete:
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: conductivity probe malfunctioning
possible sheen

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-4

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/DR
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 35.20 **Time:** 13:25 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): **Time:** *(taken prior to purging well)*
Final D.T.W. (ft): **Time:** *(taken after sample collection)*
If NAPL Present: **D.T.P.:** **D.T.W.:** **Thickness:** **Time:**

Project No.: AES 130411
Date: 11/11/13
Arrival Time: 13:23
Air Temp: 61°
T.O.C. Elev. (ft): 5443.2
Total Well Depth (ft): 47.80

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
13:29	14.58	-0.30	18.62	7.03	-10.2	¼ gal	clear, slight odor
13:33	14.65	-0.31	13.08	6.91	-0.4	1 gal	slightly murky, slight odor
13:36	14.77	-0.31	11.82	6.92	6.9	2 gal	↓
13:39	14.62	-0.31	10.17	6.84	12.5	3 gal	
13:42	14.58	-0.31	10.43	6.79	16.6	4 gal	↓
13:45	14.89	-0.31	10.88	6.84	14.8	5 gal	cloudy, slight odor
13:50	14.52	-0.31	10.67	6.74	21.0	6 gal	↓
(13:54)	—	—	—	—	—	—	Sample

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler:
Chain of Custody Record Complete:
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: conductivity probe malfunctioning

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-5

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/DR
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 35.44 **Time:** 10:32 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): **Time:** *(taken prior to purging well)*
Final D.T.W. (ft): **Time:** *(taken after sample collection)*
If NAPL Present: **D.T.P.:** **D.T.W.:** **Thickness:** **Time:**

Project No.: AES 130411
Date: 11/11/13
Arrival Time: 10:29
Air Temp: 44°
T.O.C. Elev. (ft):
Total Well Depth (ft): 45.96

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
10:38	13.41	-0.31	18.01	6.88	228.9	¼ gal	Milky, no odor
10:43	13.25	-0.31	14.52	6.60	236.0	1 gal	milky, no odor
10:46	13.24	-0.31	14.88	6.67	232.4	2	milky, no odor, tan
10:49	13.56	-0.31	14.98	6.72	230.1	3	milky, no odor, tan
10:53	13.52	-0.31	17.72	6.72	229.9	4	↓
10:56	13.71	-0.31	17.79	6.75	229.5	5	↓
11:01	13.18	-0.31	20.21	6.68	234.3	5.75	milky, no odor
11:06							sample

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler:
Chain of Custody Record Complete:
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Conductivity probe malfunctioning

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-6

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CC/DR
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 33.84 **Time:** 9:44 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): **Time:** *(taken prior to purging well)*
Final D.T.W. (ft): **Time:** *(taken after sample collection)*
If NAPL Present: D.T.P.: **D.T.W.:** **Thickness:** **Time:**

Project No.: AES 130411
Date: 11/11/13
Arrival Time: 9:42
Air Temp: 42°
T.O.C. Elev. (ft):
Total Well Depth (ft): 49.50

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
~~9:53~~	13.45	-0.37 (38.26→3~~57.7~~ DR)	~~6.65~~	245.6	1/4 gal	milky, no odor
9:56	13.91	- 0.39	37.33	6.79	237.1	1 gal	
9:59	13.70	-0.39	41.53	6.84	235.2	2 gal	
10:02	13.48	- 0.39	37.91	6.81	235.4	3 gal	
10:06	13.72	-0.39	36.36	6.83	233.6	4 gal	
10:09	13.76	- 0.38	36.06	6.82	233.8	5 gal	
10:12	13.78	-0.38	35.99	6.85	232.4	6 gal	
10:15	13.39	-0.39	37.77	6.81	234.5	7 gal	
10:22	13.16	-0.38	36.24	6.79	236.4	~~sample~~ 7.75 gal	~~sample~~
10:27							samples collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler:
Chain of Custody Record Complete:
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Conductivity probe malfunctioning

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-7

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/DR
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 36.42 **Time:** 12:06 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): **Time:** *(taken prior to purging well)*
Final D.T.W. (ft): **Time:** *(taken after sample collection)*
If NAPL Present: **D.T.P.:** **D.T.W.:** **Thickness:** **Time:**

Project No.: AES 130411
Date: 11/11/13
Arrival Time: 12:03
Air Temp: 56°
T.O.C. Elev. (ft):
Total Well Depth (ft): 48.50

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
12:11	14.58	-0.26	12.01	6.77	20.1	¼ gal	clear, slight organic odor
12:15	14.56	-0.26	11.13	6.86	-16.2	1 gal	gray, slight odor
12:18	14.43	-0.26	9.19	6.84	-36.8	2 gal	
12:21	14.79	-0.26	8.63	6.84	-45.5	3 gal	
12:24	14.39	-0.26	10.81	6.82	-50.6	4 gal	
12:26	14.39	-0.26	12.21	6.87	-51.4	5 gal	
12:29	14.40	-0.26	10.53	6.89	-48.9	6 gal	↓ samples
12:34							sample

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler:
Chain of Custody Record Complete:
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: conductivity probe malfunctioning

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-8

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/DR
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): 34.31 **Time:** 11:13 *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): **Time:** *(taken prior to purging well)*
Final D.T.W. (ft): **Time:** *(taken after sample collection)*
If NAPL Present: **D.T.P.:** **D.T.W.:** **Thickness:** **Time:**

Project No.: AES 130411
Date: 11/11/13
Arrival Time: 11:11
Air Temp: 50°
T.O.C. Elev. (ft):
Total Well Depth (ft): 47.16

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
11:18	14.15	-0.21	41.68	7.27	222.9	¼ gal	clear, no odor
11:22	14.98	-0.21	42.16	7.30	230.5	1 gal	tan, sediments, no odor
11:25	14.88	-0.21	42.37	7.26	222.8	2 gal	↓
11:28	14.87	-0.21	41.80	7.20	226.5	3 gal	↓
11:31	14.89	-0.21	42.48	7.17	226.9	4 gal	↓
11:35	14.97	-0.21	40.52	7.22	225.3	5 gal	milky, no odor
11:39	14.83	-0.21	41.05	7.20	226.4	6 gal	↓
11:42	14.73	-0.21	41.62	7.22	226.1	7 gal	↓
11:44	14.94	-0.21	41.47	7.28	224	8 gal	↓
11:49						8.25 gal	sample
							sample

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler:
Chain of Custody Record Complete:
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: conductivity probe malfunctioning

well cap broken and not bolted

revised: 08/10/09

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Sampling
Site: Energen Resouces Corporation
Location: Julander Federal #1E
Tech: C. Lameman

Project No.: AES 130411
Date: 11-14-13
Time:
Form:

Well I.D.	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-1	-	36.63	-	
MW-3	35.61	35.62	0.01	Possible sheen
MW-4	-	35.07	-	
				Sampling Began when the pump
				was turned off and removed

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-1

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lamerman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 36.63 **Time:** 1014 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: **D.T.P.:** _____ **D.T.W.:** _____ **Thickness:** _____ **Time:** _____

Project No.: AES 130411
Date: 11-14-13
Arrival Time: 1011
Air Temp: _____
T.O.C. Elev. (ft): 5444.89
Total Well Depth (ft): 50.80

YSI #2

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1032	13.95	0.935	2.75	6.87	28.4	0.25	Clear
1047	13.81	0.937	2.59	6.96	-3.9	1	Sl. gray/sed / Sl. odor
1050	13.79	0.935	1.93	6.96	-19.8	2	"
1055	13.45	0.927	1.42	7.07	-29.1	3	"
1101	13.58	0.926	1.62	7.04	-38.7	4	"
1107	13.57	0.919	1.78	7.09	-42.0	5	"
1110	13.64	0.917	2.21	7.14	-40.9	6	"
1114	13.85	0.916	1.34	7.12	-50.6	7	
1119							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-3

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C Lameman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): ____ **Time:** 1108 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: D.T.P.: 35.67 D.T.W.: 35.63 Thickness: 0.01 Time: 1108

Project No.: AES 130411
Date: 11-14-13
Arrival Time: 1106
Air Temp: ____
T.O.C. Elev. (ft): 5443.47
Total Well Depth (ft): 46.53

YSI #2

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1125	13.16	1.347	2.47	7.07	11.0	0.25	Clear/Strong Odor
1128	13.40	1.318	1.09	6.90	1.2	1	Sl. Gray/Strong Odor.
1131	13.73	1.385	1.36	6.90	3.6	2	"
1134	13.72	1.370	1.41	6.94	0.9	3	"
1137	13.72	1.376	1.32	6.91	1.0	4	"
1140	13.61	1.393	1.06	6.89	1.2	5	"
1143	—	—	—	—	—	—	Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments: Possible Sheen

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-4

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: C. Lameman
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 35.07 **Time:** 1135 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: D.T.P.: _____ **D.T.W.:** _____ **Thickness:** _____ **Time:** _____

Project No.: AES 130411
Date: 11-14-13
Arrival Time: 1133
Air Temp: _____
T.O.C. Elev. (ft): 5443.2
Total Well Depth (ft): 47.80

YSI #2

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1151	14.42	0.900	2.80	7.36	35.4	0.25	Clear / Sl. Odor
1154	14.66	0.934	1.68	7.19	17.9	1	Sl. Gray / Sl. odor
1157	14.53	0.933	1.34	7.17	13.0	2	"
1200	14.63	0.934	1.21	7.15	9.8	3	"
1203	14.51	0.930	1.26	7.20	10.9	4	"
1206	14.48	0.932	1.03	7.15	8.9	5	Clear / Sl. Odor
1209	14.36	0.936	1.08	7.14	7.9	6	
1214							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

DEPTH TO GROUNDWATER MEASUREMENT FORM

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Project: Groundwater Sampling
Site: Energen Resouces Corporation
Location: Julander Federal #1E
Tech: C. Lameman/ S. Glasses

Project No.: AES 130411
Date: 02/10/14
Time: 0805
Form: GW SAMPLING

Well I.D.	Depth to NAPL (ft.)	Depth to Water (ft.)	NAPL Thickness (ft.)	Notes / Observations
MW-1	–	40.10	–	
MW-2	–	36.71	–	
MW-3	–	38.70	–	
MW-4	–	38.41	–	
MW-5	–	38.45	–	
MW-6	–	37.06	–	
MW-7	–	39.66	–	
MW-8	–	37.86	–	Well Cap Broken

Wells measured with KECK water level or KECK interface tape, decontaminated between each well measurement.

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-1

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/STHG
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 40.10 **Time:** 1300 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: D.T.P.: ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: ____
Arrival Time: 1258
Air Temp: ____
T.O.C. Elev. (ft): 5444.89
Total Well Depth (ft): 49.75

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO * (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1307	14.45	0.803	2.15	7.69	-168.0	0.25	Clear / Odor
1311	13.95	0.810	1.51	7.55	-163.2	1	Lt Gray / Strong Odor
1318	14.16	0.807	1.41	7.50	-162.3	2	Gray / Strong Odor
1323	14.16	0.810	2.26	7.49	-159.3	3	"
1328	14.13	0.811	3.94	7.51	-157.3	4	"
1332	14.10	0.818	4.22	7.54	-145.0	5	"
1337							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:
* Possible DO sensor malfunction

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-2

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/SHG
Purge / No Purge: Purge
Well Diameter (in): 1
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 36.71 **Time:** 8:13 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: D.T.P.: _____ **D.T.W.:** _____ **Thickness:** _____ **Time:** _____

Project No.: AES 130411
Date: 2/10/14
Arrival Time: 810
Air Temp: _____
T.O.C. Elev. (ft): 5441.51
Total Well Depth (ft): 42.3

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO * (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1454	14.26	0.552	6.35	7.76	-30.8	1/4	Clear/No Odor.
1500	14.27	0.536	4.62	7.70	-19.3	0.25	Sl. Sed/Tan/No Odor
1516	14.85	0.537	4.95	7.62	-16.6	0.5	"
1521	—	—	—	—	—	—	Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

* Possible DO sensor malfunction

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-3

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/SHG
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 38.70 **Time:** 1411 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: **D.T.P.:** ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 2/10/14
Arrival Time: 1410
Air Temp: ____
T.O.C. Elev. (ft): 5443.47
Total Well Depth (ft): 46.52

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1418	14.43	0.977	1.72	7.56	+148.1	0.25	Clear/Strong odor
1422	14.26	0.992	1.02	7.32	-130.0	1	Sl. Sed/Lt tan/St. Odor
1428	14.25	0.995	1.44	7.23	-117.5	2	Sed/Lt. tan/gray/Str. odor
1433	14.21	0.991	1.12	7.22	-115.2	3	"
1442	14.19	0.993	1.11	7.17	-111.5	4	"
1447	~	~	~	~	~	~	Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-4

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/SHG
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 38.41 **Time:** 1341 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: D.T.P.: ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 2/10/14
Arrival Time: 1340
Air Temp: ____
T.O.C. Elev. (ft): 5443.2
Total Well Depth (ft): 47

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO * (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1348	14.67	0.913	1.85	7.65	-176.1	0.25	Clear/Strong Odor
1352	14.77	0.906	1.00	7.47	-163.7	1	Cloudy/St. Odor
1356	14.62	0.908	1.25	7.40	-149.6	2	"
1401	14.47	0.907	1.19	7.36	-135.5	3	"
1406	14.32	0.920	1.56	7.32	-112.5	4	"
1409							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

* Possible DO sensor malfunction

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-5

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/SHG
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 38.45 **Time:** 1102 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: D.T.P.: ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 2/10/14
Arrival Time: 1150
Air Temp: ____
T.O.C. Elev. (ft): ____
Total Well Depth (ft): 46

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO* (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1111	13.74	0.858	4.59	7.89	131.5	0.25	Clear / No Odor
1116	13.82	0.866	3.29	7.72	112.4	1	Clear / No Odor
1121	13.86	0.884	3.24	7.64	93.7	2	Sl. Sed. / H. fuel odor
1132	14.06	0.901	2.70	7.53	69.0	3	"
1138	13.37	0.908	2.67	7.46	66.5	4	"
1143							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

* DO Malfunction?

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-6

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL / SHG
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): _____ **Time:** _____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 37.06 **Time:** 848 *(taken prior to purging well)*
Final D.T.W. (ft): _____ **Time:** _____ *(taken after sample collection)*
If NAPL Present: D.T.P.:_____ D.T.W.:_____ Thickness:_____ Time:_____

Project No.: AES 130411
Date: 2/10/14
Arrival Time: 814
Air Temp: _____
T.O.C. Elev. (ft): _____
Total Well Depth (ft): 50

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO* (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
854	13.83	0.932	11.41	8.55	121.2	0.25	Clear / No Sed.
0902	13.78	0.929	8.89	7.38	142.1	1	Sl. Sed. / No Odor
0908	13.96	0.927	6.90	7.23	134.5	2	Lt. Brn / Sl. Sed. / No Odor
0911	13.86	0.931	7.92	7.55	126.7	3	"
0916	13.67	0.927	7.97	7.56	114.1	4	"
0926	13.78	0.919	7.22	7.39	106.6	5	"
0943	13.24	0.922	7.21	7.38	98.7	6.25	"
0948							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

* DO Reading may be off.
Slow Recharge

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-7

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/SHG
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 39.66 **Time:** 1146 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: D.T.P.: ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 2/10/14
Arrival Time: 1143
Air Temp: ____
T.O.C. Elev. (ft): ____
Total Well Depth (ft): 48.1

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO * (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1156	14.10	0.711	1.54	7.72	-59.7	0.25	Clear / SI Odor
1205	14.44	0.714	0.90	7.54	-182.1	1	Gray / Odor
1210	14.39	0.710	1.02	7.51	-186.6	2	"
1214	14.46	0.709	0.89	7.50	-182.3	3	"
1221	14.45	0.698	1.02	7.50	-160.4	4	"
1226	~~~	~~~	~~~	~~~	~~~	~~~	Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

* Possible DO sensor Malfunction

revised: 08/10/09

MONITORING WELL SAMPLING RECORD

Monitor Well No: MW-8

Animas Environmental Services
624 E. Comanche, Farmington NM 87401
Tel. (505) 564-2281 Fax (505) 324-2022

Site: Groundwater Sampling
Location: Energen Resources Corporation
Project: Julander Federal #1E
Sampling Technician: CL/SHG
Purge / No Purge: Purge
Well Diameter (in): 2
Initial D.T.W. (ft): ____ **Time:** ____ *(taken at initial gauging of all wells)*
Confirm D.T.W. (ft): 37.86 **Time:** 1000 *(taken prior to purging well)*
Final D.T.W. (ft): ____ **Time:** ____ *(taken after sample collection)*
If NAPL Present: D.T.P.: ____ **D.T.W.:** ____ **Thickness:** ____ **Time:** ____

Project No.: AES 130411
Date: 2/10/2014
Arrival Time: 0957
Air Temp: ____
T.O.C. Elev. (ft): ____
Total Well Depth (ft): 47.25

Water Quality Parameters - Recorded During Well Purging

Time	Temp (deg C)	Conductivity (µS) (mS)	DO* (mg/L)	pH	ORP (mV)	PURGED VOLUME (see reverse for calc.)	Notes/Observations
1006	14.46	0.554	12.26	8.19	136.6	0.25	Clear/No Odor
1013	14.66	0.547	11.43	8.07	140.0	1	Sl. Sed/Tan/No Odor
1021	14.64	0.550	11.00	8.02	136.7	2	"
1027	14.56	0.551	10.01	8.00	138.1	3	"
1034	14.52	0.553	10.07	8.01	126.3	4	
1038	14.51	0.552	10.54	8.01	126.4	4.5	
1041							Samples Collected

Analytical Parameters (include analysis method and number and type of sample containers)

USEPA Method 8021 (BTEX) - Three 40 mL VoA

Disposal of Purged Water: Waste Tank Onsite
Collected Samples Stored on Ice in Cooler: Yes
Chain of Custody Record Complete: Yes
Analytical Laboratory: Hall Environmental Analysis Laboratory, Albuquerque, NM
Equipment Used During Sampling: Keck Water Level or Keck Interface Level, YSI Water Quality Meter and New Disposable Bailer

Notes/Comments:

revised: 08/10/09