FIRST SEMI-ANNUAL 2014 MONITORING REPORT

Groundwater Quality Monitoring Program
Active Oil and Gas Well Sites
Longmont, Colorado

October 16, 2014
Terracon Project No. 25147063

Prepared for:
City of Longmont
Longmont, Colorado

Prepared by:
Terracon Consultants, Inc.
Wheat Ridge, Colorado

October 16, 2014

City of Longmont
7 South Sunset Street
Longmont, Colorado 80501

Attn: Mr. Dan Wolford
P: (303) 774-4691
Dan.Wolford@ci.longmont.co.us

Re: First Semi-Annual 2014 Monitoring Report
Groundwater Quality Monitoring Program
Active Oil and Gas Well Sites
Longmont, Colorado
Terracon Project No. 25147063

Dear Mr. Wolford:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of the 2014 Groundwater Quality Monitoring Program activities completed at five of the active oil and gas (O&G) well sites located in the City of Longmont, Colorado between County Road 1 and County Road 7. The report presents data from recent field activities that included the collection of groundwater samples for laboratory analysis. The activities were completed to address the findings presented in the *2012 Annual Oil & Gas Wellhead Reconnaissance Report* dated August 21, 2012, the *First Quarter 2013 Monitoring Report* dated May 31, 2013, and the *Third Quarter 2013 Monitoring Report* dated December 31, 2013. Terracon conducted the monitoring in general accordance with our proposal (P25130874) dated January 30, 2014, and the Sampling and Analysis Plan dated February 1, 2013.

Terracon appreciates this opportunity to provide environmental services to the City of Longmont. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

Jonathan P. Anstey, P.G.
Senior Project Geologist

FOR
John C. Dellaport, P.E., P.G., CHMM
Senior Project Engineer

Terracon

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ACTIVE OIL AND GAS WELL SITES
LONGMONT, COLORADO

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1.0 SITE DESCRIPTION

The active oil and gas (O&G) well sites are located within the City of Longmont (the City) between County Road 1 and County Road 7. Originally nine well sites and one associated tank battery were assessed in March 2013 for potential impacts to groundwater as follows:

- City of Longmont #1
- Domenico #1;
- Evans #6 Wellhead;
- Evans #6 Tank Battery;
- Longmont #8-10K;
- Powell #1;
- Serafini Gas Unit;
- Sherwood #1;
- Sherwood #2; and,
- Stamp 31-2C.

Figure 1 shows the well site locations. The 2014 monitoring event was modified based on the results of the previous groundwater sample results and the updated status of the well sites. City of Longmont #1, Longmont #8-10K, Powell #1, Sherwood #1, and Sherwood #2 were each removed from the 2014 monitoring event based on the results reported in the First and Third Quarter 2013 sampling events and subsequent conversations with the City of Longmont. Additionally, based on direction from the City of Longmont, six previously-installed monitoring wells at the Rider #1 Well Site were added to the first semi-annual monitoring event of 2014 in order to assess potential impacts (location is depicted on Figure 1).

2.0 SCOPE OF SERVICES

In 2012, Terracon performed an inspection of each of the well sites for the City (Terracon Project No. 25127040). The *2012 Annual Oil & Gas Wellhead Reconnaissance Report* (Terracon, 2012) dated August 21, 2012 summarizes the equipment present at each of the well sites and Terracon's observations. Based on the request from the City and findings presented in the *2012 Annual Oil & Gas Wellhead Reconnaissance Report* this Groundwater Quality Monitoring Program was initiated.

The objective of the Groundwater Quality Monitoring Program is to evaluate groundwater quality beneath the active O&G well sites on the City's property by installing a network of groundwater monitoring wells, collecting groundwater samples, and analyzing the samples for the Colorado Oil and Gas Conservation Commission (COGCC) recommended constituents for monitoring groundwater at O&G production facilities.

The initial monitoring event conducted in March 2013 included development of the Sampling and Analysis Plan (SAP), monitoring well installation and development, collection of groundwater samples, laboratory analysis, and reporting and consultation with the City. A subsequent monitoring event was conducted in October 2013. These monitoring events are summarized in the *First Quarter 20313 Monitoring Report*, dated May 31, 2013 and the *Third Quarter 2013 Monitoring Report*, dated December 31, 2013.

2.1 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

2.2 Additional Scope Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the sites contain no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during monitoring well construction and groundwater sampling. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

2.3 Reliance

This report has been prepared for the exclusive use of the City of Longmont, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the

site) is prohibited without the express written authorization of the City of Longmont and Terracon. Any unauthorized distribution or reuse is at the City of Longmont's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, this report, and service agreement for the project.

3.0 FIELD INVESTIGATION

Terracon conducted the fieldwork under a site-specific Health and Safety Plan (HASP) developed for this project. Work was performed using Occupational Safety and Health Administration (OSHA) Level D work attire consisting of hard hats, safety glasses, protective gloves, and protective boots.

Terracon developed a site-specific SAP, which included the following:

- Location of proposed boreholes/monitoring wells at each well site as agreed to by the City's representative, (Mr. Dan Wolford [Natural Resources Division, Manager of Open Space]);
- Types of samples to be collected and collection methods;
- Sample tests/analyses and methods; and,
- Quality control and quality assurance measures.

This monitoring event was conducted in general accordance to the SAP with modifications (the removal of sampling well sites from the sampling event, as described above).

3.1 Groundwater Sampling

Terracon used a combination of low-flow sampling techniques and hand bailing with a disposable bailer to purge a representative groundwater sample from the monitoring wells. The wells were sampled in accordance with "Terracon Field Methods for Petroleum Storage Tank Assessment, Remediation and Emergency Response", November 2013. After groundwater parameters of pH, temperature and specific conductivity had stabilized, a groundwater sample was collected from each of the monitoring wells. The samples were placed in a laboratory provided, pre-cleaned containers and stored in a cooler with ice at 4° (± 2°) Celsius during delivery to the laboratory. The samples were submitted under chain-of-custody and analyzed for the parameters summarized in the table below in a standard turn-around time.

Analytical Constituents and Methods

Constituents	Analytical Method
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	EPA Method 8260
Dissolved Gasses: Methane, Ethane and Ethane	RSK 175
Major Cations – Dissolved (Calcium, Iron, Magnesium, Potassium, and Sodium)	EPA Method 6010
Strontium	EPA Method 6010
Alkalinity	SM 2320B
Bromide	EPA Method 300.0
Chloride	EPA Method 300.0
Nitrate and Nitrite	EPA Method 353.2
Sulfate	EPA Method 300.0

The groundwater sample naming convention used is as follows:

- [Site Abbreviation]-[Well Designation]-[6 Digit Date: YYMMDD].
- Example: RD1-MW01-140730 is the groundwater sample collected from Rider Gas Unit well site, monitoring well MW01 on July 30, 2014.
- Note: In laboratory reports, wells on the Stamp 31-2C well site are identified without the site abbreviation (S31). Wells on the Evans #6 and Dominico #1 sites are identified without the 6 digit date.

The groundwater samples were submitted to Pace Analytical Services, Inc. (Pace) in Lenexa, Kansas. Pace performed Quality Analysis/Quality Control (QA/QC) during the analysis process of the groundwater samples. This QA/QC process involved completing a method blank, laboratory control sample, matrix spike, matrix spike duplicate, and a sample duplicate to test the accuracy and calibration of the laboratory equipment and processes.

Additionally, during Terracon's site visit on July 29, 2014, Stamp 31-2C Well site monitoring well MW02 was observed to be filled with sediment. The cause of the excessive sediment in monitoring well MW02 is unknown. Terracon was unable to collect a groundwater sample.

4.0 RESULTS OF THE FIELD INVESTIGATION

4.1 Hydrogeology

Groundwater was encountered from 2.92 feet below ground surface (bgs) as observed in monitoring well S31-MW01 (Stamp 31-2C) to 9.03 feet bgs as observed in DMI-MW03 (Domenico #1). Groundwater elevations were observed ranging from 4,846.22 feet above mean sea level (amsl) in monitoring well DM1-MW03 (Domenico #1) to 4,954.23 feet amsl in monitoring well S31-MW01 (Stamp 31-2C). Depth to groundwater and groundwater elevation data are summarized in Table 1.

Depth to groundwater and groundwater elevation data were used to generate potentiometric surface maps and estimated groundwater flow direction. Figures 2 and 3 illustrate potentiometric surfaces based on the groundwater elevations as measured in July 2014 (Note: Figure 2 includes all the well sites except Stamp 31-2C, which is on Figure 3). Wellhead elevation data was not available for the Rider#1 Well site; therefore a potentiometric surface map was not generated for this site.

As depicted on the potentiometric surface maps, groundwater flow direction is variable, depending on the well site. However, groundwater flow beneath most of the well sites appears to flow towards the St. Vrain Creek. The well site groundwater flow directions are as follows:

- Evans #6 Wellhead: southeast towards the St. Vrain Creek;
- Evans #6 Tank Battery: southeast towards the St. Vrain Creek;
- Domenico #1 Well site: northeast towards the St. Vrain Creek; and,
- Stamp 31-2C: southeast towards Union Reservoir.

5.0 ANALYTICAL RESULTS

The laboratory analytical report and chain-of-custody record are included in Appendix C. The groundwater analytical results are summarized in Table 2. The following sections summarize the results of the analytical testing.

Laboratory analytical results for the groundwater samples were compared to the groundwater standard applicable to oil and gas well sites, the COGCC Table 910-1 standards (May 30, 2011). The Colorado Department of Public Health and Environment's (CDPHE) Basic Standards for Groundwater (January 31, 2013) are included for reference only as the groundwater samples were not collected from a drinking water source.

A summary of constituent concentrations exceeding these standards in the groundwater samples is included in Table 2.

Groundwater samples were collected from the following sites: Evans #6 Wellhead (3 wells), Evans #6 Tank Battery (3 wells), Domenico #1 Well site (3 wells), Stamp 31-2C Well site (5 wells), and Rider #1 Well site (6 wells); for a total of 20 samples. The groundwater analytical results are discussed in the following sections.

5.1 BTEX in Groundwater

BTEX compounds were detected in two groundwater samples at concentrations above the laboratory reporting limits at the Stamp 31-2C well site.

- Sample MW01-140729 was reported with an ethylbenzene concentration at 0.0110 milligrams per liter (mg/L), below the COGCC and CDPHE standard of 0.7 mg/L. Historically, Stamp 31-2C monitoring well MW01 has had concentrations of ethylbenzene below the laboratory detection limit of 0.0010 mg/L.

- Sample MW03-140729 was reported with a benzene concentration of 0.0018 mg/L, below the COGCC and CDPHE standard of 0.005 mg/L. The October 2013 sample from Stamp 31-2C monitoring well had a reported concentration of benzene at 0.0062 mg/L. The concentration of benzene has decreased approximately 71 percent.

BTEX compounds were detected in three groundwater samples at concentrations above the laboratory reporting limits at the Rider #1 Well site.

- Samples RD1-MW03R-140730 (0.0025 mg/L), RD1-MW04-140730 (0.0778 mg/L), and RD1-MW05-140730 (0.0088 mg/L) had reported concentrations of ethylbenzene below the COGCC and CDPHE standard of 0.7 mg/L.

- Samples RD1-MW03R-140730 (0.0133 mg/L), RD1-MW04-140730 (1.14 mg/L), and RD1-MW05-140730 (0.0594 mg/L) had reported concentrations of total xylenes below the COGCC and CDPHE standard of 1.4 to 10 mg/L.

BTEX constituents were not detected in groundwater samples above the method reporting limits at the Evans #6 Wellhead, Evans #6 Tank Battery, and Domenico #1 well site during this monitoring event.

5.2 Dissolved Gasses

Dissolved methane was detected in two samples at concentrations above the laboratory reporting limits at the Domenico #1 Well site.

- Methane was reported in samples DMI-MW02 and DMI-MW03 at concentrations of 0.0291 mg/L and 0.0119 mg/L, respectively.

Additionally, dissolved methane was detected in two samples at concentrations above the laboratory reporting limits at the Stamp 31-2C Well site.

- Methane was reported in samples MW01-140729 and MW03-140729 at concentrations of 0.142 mg/L and 0.111 mg/L, respectively.

Dissolved methane was also detected in four samples at concentrations above the laboratory reporting limits at the Rider #1 Well site.

- Methane was reported in samples RD1-MW02-140730, RD1-MW03R-140730, RD1-MW04-140730, and RD1-MW05-140730 at concentrations of 0.0094 mg/L, 0.0347 mg/L, 0.0316 mg/L, and 0.406 mg/L, respectively.

Dissolved methane in groundwater may be an indication of a release at an O&G production well site. Neither the COGCC nor the CDPHE have developed standards for methane in groundwater. The COGCC has developed standards for source water (which are water wells that are registered with Colorado Division of Water Resources, including household, domestic, livestock, irrigation, municipal/public, and commercial wells, permitted or adjudicated springs, or monitoring wells installed for the purpose of complying with groundwater baseline sampling and monitoring requirements) used for household, domestic, livestock, irrigation, municipal/public, or commercial or other specifically in the Greater Wattenberg Area (GWA), of which the various well sites are located. Section 318.4.e.(4).G of the COGCC Rules and Regulations states that concentrations of methane greater than 1.0 mg/L require a gas compositional and stable isotope analysis of the methane to determine the source of the methane (thermogenic, biogenic or a mixture of the two). None of the groundwater samples with detections of methane exceeded 1.0 mg/L.

5.3 Inorganics in Groundwater

Inorganic cations and anions can be secondary indicators of well site releases associated with produced water. Neither the CDPHE nor the COGCC have developed groundwater standards for the following indicator parameters: dissolved calcium, dissolved magnesium, dissolved potassium, dissolved sodium, strontium, alkalinity species, bromide, or sulfate.

In September 2013, the Colorado Front Range area experienced an historic precipitation event that caused extensive flooding throughout Saint Vrain Creek and Boulder Creek drainages. Specifically, the Evans #6 Wellhead, Evans #6 Tank Battery, and Domenico #1 Well site sampling locations were inundated as the Saint Vrain Creek and Boulder Creek flooded overtop their banks. The inorganic analytes were reported with a general increase in concentration during the October 2013 sampling event that may be attributed to the historic flood event. During the July 2014 sampling event, the concentration of the inorganic parameters has generally decreased, with the exception of the sites discussed below.

5.3.1 Evans #6 Tank Battery Inorganics in Groundwater

The Evans #6 Tank Battery inorganic analyte concentration trends appear to be inconsistent with what was observed at other sites affected by the September 2013 flooding. The analytical results are summarized below.

Upgradient monitoring well, E6T-MW01:

- Groundwater sample from E6T-MW01, was reported with a decrease in all of the inorganic parameters with the exception of strontium, which increased in concentration 12.7% higher than the October 2013 sample result from 4.03 mg/L to 4.54 mg/L.
- The measured sulfate concentration of 2,840 mg/L in E6T-MW01 is in exceedance of the criteria established City of Longmont's guideline level, the CDPHE domestic water supply drinking water standard of 250 mg/L.
- None of the remaining parameters were in exceedance of either the CDPHE or COGCC thresholds.

Cross gradient monitoring well, E6T-MW03:

- Groundwater sample from E6T-MW03, was reported with an increase in dissolved calcium, dissolved magnesium, dissolved sodium, chloride, and sulfate. The remaining parameters were reported with a decrease in concentration from October 2013.
- The chloride concentration (254 mg/L) is in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- The sulfate concentration (6,240 mg/L) is in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- None of the remaining parameters were in exceedance of either the CDPHE or COGCC thresholds.

Downgradient monitoring well, E6T-MW02:

- Groundwater sample from E6T-MW02, was reported with a general increase of inorganic parameters with the exception of bicarbonate and total alkalinity whose concentrations decreased 13% since the October 2013 sampling event and the nitrogen as nitrate and nitrite concentrations, which decreased to concentrations below the laboratory detection limits and are no longer in exceedance of the CDPHE standards.
- The largest observed increase of concentration was sulfate, which increased 74% to 3,080 mg/L and remains in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- None of the remaining parameters were in exceedance of either the CDPHE or COGCC thresholds.

5.3.2 Domenico #1 Well Site Inorganics in Groundwater

The Domenico #1 Well Site inorganic analyte concentration trends appear to be inconsistent with what was observed at other sites affected by the September 2013 flooding. The analytical results are summarized below.

Upgradient monitoring well, DMI-MW01:

- Groundwater sample from DMI-MW01 was reported with a decrease in all of the inorganic analyte concentrations since the previous sampling event in March 2013.
- The sulfate concentration (373 mg/L) remains in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- None of the remaining parameters were in exceedance of either the CDPHE or COGCC thresholds.

Cross gradient monitoring well, DMI-MW02:

- Groundwater sample from DMI-MW02 was reported with an increase in all of measured inorganic parameters with the exception of nitrogen at nitrite, which decreased in concentration by 21.7% since the March 2013 sampling event.
- The sulfate concentration (685 mg/L) remains in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- None of the remaining parameters were in exceedance of either the CDPHE or COGCC thresholds.

Downgradient monitoring well, DMI-MW03:

- Groundwater sample from DMI-MW03 was reported with a general decrease or relatively unchanged in inorganic analyte concentrations with the exception of nitrogen as nitrate and nitrite which had a measured concentration of 2.8 mg/L, an increase over the March 2013 value of 0.3 mg/L. The measured concentration is not in exceedance of the CDPHE domestic supply drinking water standard of 10 mg/L.
- The sulfate concentration (423 mg/L) remains in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- None of the remaining parameters were in exceedance of either the CDPHE or COGCC thresholds.

5.3.3 Stamp 31-2C Well Site Inorganics in Groundwater

The Stamp 31-2C Well site is not located within the Saint Vrain or Boulder Creek floodplains. The analytical results for the Stamp 31-2C Well site are summarized below.

- Groundwater sample from MW01 was reported with a general increase in concentrations of inorganic constituents. The largest increase in MW01 was observed in the chloride concentration, which was measured at 725 mg/L, a 96.5% increase from the October 2013 value.
- The chloride concentration (725 mg/L) is in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- The sulfate concentration (8,930 mg/L) is in exceedance of the CDPHE domestic supply drinking water standard of 250 mg/L.
- Sample MW01-140729 had the only detectable concentration of dissolved iron, measured at 0.192 mg/L, below the lower limit of the CDPHE standard of 0.3 mg/L.
- Monitoring well MW02 was not sampled due to a sediment deposit observed in the well during Terracon's site visit on July 29, 2014. No groundwater was present in MW02.
- Groundwater samples from MW03, MW04, and MW05 were reported with a general decrease or relatively unchanged concentration of the inorganic constituents. Sulfate concentrations in MW03 (6,480 mg/L), MW04 (6,960 mg/L), and MW05 (5,740 mg/L) exceed the CDPHE domestic supply drinking water standard of 250 mg/L.
- Sample MW06-140729 had a measured sulfate concentration of 5,540 mg/L, in exceedance of the 250 mg/L CDPHE domestic supply drinking water standard.

5.3.4 Rider #1 Well Site Inorganics in Groundwater

The Rider #1 Well site monitoring wells were sampled for the first time at the direction of the City of Longmont. Therefore, the Rider #1 Well site lacks comparative historical data. The analytical results for the six monitoring wells sampled are summarized below.

- Dissolved calcium concentrations were detected between 82.1 mg/L and 92.4 mg/L.
- Dissolved iron was not detected above the laboratory reporting limit in any of the samples.
- Dissolved magnesium concentrations were detected between 74.8 mg/L and 81.4 mg/L.
- Dissolved potassium concentrations were detected between 1.89 mg/L and 2.78 mg/L.
- Dissolved sodium concentrations were detected between 92.7 mg/L and 127 mg/L.
- Strontium concentrations were detected between 3.06 mg/L and 3.60 mg/L.
- Total alkalinity concentrations were detected between 407 mg/L and 584 mg/L.
- Chloride concentrations were detected between 34.5 mg/L and 38.6 mg/L.
- Nitrogen as Nitrate and Nitrite concentrations were detected between 2.2 mg/L and 4.8 mg/L.
- Sulfate concentrations in samples RD1-MW01-140730 (323 mg/L), RD1-MW02-140730 (305 mg/L), RD1-MW03R-140730 (290 mg/L), RD1-MW04-140730 (320 mg/L), RD1-MW05-140730 (291 mg/L), and RD1-MW06-140730 (306 mg/L) exceed the CDPHE domestic supply drinking water standard of 250 mg/L.

5.4 General Groundwater Parameters

Specific conductance was reported in the groundwater samples ranging from 1,023 to 11,866 micro Siemens per centimeter (µmhos/cm). Relatively higher concentrations of specific conductance were reported in groundwater samples with higher concentrations of alkalinity, bromide, chloride, nitrate, nitrite, sulfate and sulfide.

Groundwater samples were reported to have a neutral pH (i.e. near 7.0); pH values measured during purging were reported in a range from 7.09 to 7.49, which is within the range of CDPHE's drinking water standard for pH of 6.5 to 8.5.

6.0 CONCLUSIONS

Based on the scope of services described in this report and subject to the limitations described herein, Terracon concludes the following.

- Groundwater was not evaluated at the City of Longmont #1, Longmont #8-10K, Powell #1, Serfani Gas Unit, Sherwood #1, and Sherwood # 2 well sites during this groundwater quality monitoring event. Based on Terracon's initial assessments, these sites will be assess on a biennial basis.

- Groundwater impacts were initially suspected at the Evans #6 Wellhead site after the October 2013 sampling event as a result of elevated indicator parameter concentrations. During the subsequent monitoring event, the indicator parameter concentrations have returned to values consistent with the March 2013 sampling event. The temporary increase in inorganic analyte concentrations is believed to be a result of the historic precipitation event and associated flooding that occurred in September 2013. The disturbance of surface conditions coupled with a sudden rise in the groundwater table is likely to have caused the indicator parameter concentration increase.

- Potential groundwater impacts are suspected at the Evans #6 Tank Battery due to the elevated and increasing concentrations of sodium, chloride and sulfate; which may be indicators of a release at an oil and gas well site.

- The Domenico #1 Well Site monitoring wells were not evaluated during the October 2013 sampling event because the operator, Noble Energy, was plugging and abandoning the well and removing the associated production equipment during that time. However, the Domenico #1 Well Site wells were sampled during the first semi-annual event of 2014. Monitoring well MW02, closest in proximity to the former above ground storage tanks (approximately 50 feet), contained elevated concentrations of several indicator parameters, which may be a sign of a release at an oil and gas site. Based on these results, impacts to groundwater are suspected at the Domenico #1 site.

- Groundwater is potentially impacted at the Stamp 31-2C well site. While no BTEX compounds were detected at concentrations that exceed the COGCC standards, ethylbenzene and benzene were measured at concentration above the laboratory detection limit in wells MW01 and MW03, respectively. Concentrations of BTEX compounds are decreasing, indicating the impacts to groundwater are naturally attenuating. Methane was detected in MW01, while methane and ethane were detected in MW03.

- Groundwater is potentially impacted at the Rider #1 Well site. While no BTEX compounds were detected above at concentrations above the COGCC standards, ethylbenzene and total xylenes were measure above the laboratory detection limit in monitoring wells RD1-MW03R, RD1-MW04, and RD1-MW05. Additionally, methane was detected above the laboratory detection limit in monitoring wells RD1-MW02, RD1-MW03R, RD1-MW04, and RD1-MW05.

7.0 RECOMMENDATIONS

Terracon recommends the continued monitoring of the Evans #6 Wellhead, Evans #6 Tank Battery, Domenico #1 Well Site, Stamp 31-2C Well Site, and Rider #1 Well Site on a semi-annual basis. The continued monitoring of the aforementioned sites will work to augment the existing data set, will assist in determining to the extent groundwater impacts are present or if sites shall be added or removed from the semi-annual sampling list, and will track trends in the groundwater quality.

Additionally, Terracon recommends developing localized background groundwater concentrations for chloride and sulfate to determine the COGCC Table 910-1 values following the biennial groundwater monitoring event that includes the each of the active O&G well sites. The background concentration values should be developed from data collected in 2013 from wells in which no groundwater impacts are suspected (City of Longmont #1, Longmont #8-10K, Powell #1, Sherwood #1, and Sherwood #2).

8.0 REFERENCES

Terracon 2012. 2012 Annual Oil & Gas Wellhead Reconnaissance Report, City of Longmont, Parks and Forestry Division, Longmont, Colorado, Terracon Project Number 25127040, August 21, 2012.

Terracon 2013a. Sampling and Analysis Plan, Groundwater Quality Monitoring Program, City of Longmont, Terracon Project Number 25127127, February 1, 2013.

Terracon 2013b. First Quarter 2013 Monitoring Report, Groundwater Quality Monitoring Program, Active Oil and Gas Well Sites, City of Longmont, Terracon Project Number 25127127, May 31, 2013.

Terracon 2013c. Third Quarter 2013 Monitoring Report, Groundwater Quality Monitoring Program, Active Oil and Gas Well Sites, City of Longmont, Terracon Project Number 25127127, December 31, 2013.

APPENDIX A
TABLES AND FIGURES

Table 1 - Groundwater Elevation Data
City of Longmont - Groundwater Quality Monitoring
Project Number 25127127

Well ID	Top of Casing Elevation	Date Measured	Depth to Groundwater	Groundwater Elevation
Sherwood #1 Wellhead				
SH1-MW01	4902.75	3/18/2013	8.49	4894.26
		10/23/2013	6.70	4896.05
SH1-MW02	4900.99	3/18/2013	7.41	4893.58
		10/23/2013	6.30	4894.69
SH1-MW03	4901.80	3/18/2013	7.64	4894.16
		10/23/2013	6.33	4895.47
Sherwood #2 Wellhead				
SH2-MW01	4896.76	3/18/2013	5.20	4891.56
SH2-MW02	4896.15	3/18/2013	5.71	4890.44
SH2-MW03	4896.32	3/18/2013	5.11	4891.21
City of Longmont #1 Wellhead				
CL1-MW01	4896.99	3/20/2013	6.42	4890.57
CL1-MW02	4896.04	3/20/2013	5.75	4890.29
CL1-MW03	4896.33	3/20/2013	5.86	4890.47
Serafini Gas Unit				
SGU-MW01	4892.37	3/20/2013	5.52	4886.85
		10/22/2013	3.49	4888.88
SGU-MW02	4891.42	3/21/2013	5.17	4886.25
		10/22/2013	3.45	4887.97
SGU-MW03	4891.72	3/21/2013	5.59	4886.13
		10/22/2013	3.59	4888.13
Powell #1 Wellhead				
PL1-MW01	4885.90	3/20/2013	11.91	4873.99
PL1-MW02	4885.58	3/19/2013	12.00	4873.58
PL1-MW03	4887.26	3/19/2013	13.04	4874.22
Evans #6 Wellhead				
E6W-MW01	4882.37	3/22/2013	4.50	4877.87
		10/23/2013	4.80	4877.57
		7/28/2014	4.85	4877.52
E6W-MW02	4882.45	3/22/2013	5.19	4877.26
		10/23/2013	6.50	4875.95
		7/28/2014	5.80	4876.65
E6W-MW03	4881.53	3/22/2013	4.41	4877.12
		10/23/2013	5.15	4876.38
		7/28/2014	4.95	4876.58
Evans #6 Tank Battery				
E6T-MW01	4879.08	3/22/2013	8.01	4871.07
		10/23/2013	8.16	4870.92
		7/28/2014	8.93	4870.15
E6T-MW02	4877.68	3/22/2013	6.40	4871.28
		10/23/2013	7.47	4870.21
		7/28/2014	8.54	4869.14
E6T-MW03	4878.03	3/22/2013	6.61	4871.42
		10/23/2013	7.62	4870.41
		7/28/2014	8.44	4869.59
Longmont #8-10K Wellhead				
LG8-MW01	4868.80	3/22/2013	3.64	4865.16
LG8-MW02	4869.03	3/22/2013	4.32	4864.71
LG8-MW03	4869.11	3/22/2013	3.21	4865.90
Domenico #1 Wellsite				
DM1-MW01	4857.64	3/19/2013	7.41	4850.23
		7/29/2014	6.11	4851.53
DM1-MW02	4854.17	3/19/2013	3.97	4850.20
		7/29/2014	3.18	4850.99
DM1-MW03	4855.27	3/19/2013	5.15	4850.12
		7/29/2014	9.05	4846.22
Stamp 31-2C Wellsite				
S31-MW01	4957.15	3/22/2013	6.00	4951.15
		10/24/2013	3.08	4954.07
		7/29/2014	2.92	4954.23
S31-MW02	4958.62	3/22/2013	8.55	4950.07
		10/24/2013	3.92	4954.70
		7/29/2014	NR**	NR**
S31-MW03	4958.27	10/24/2013	4.91	4953.36
		7/29/2014	5.24	4953.03
S31-MW04	4957.11	3/22/2013	9.22	4947.89
		10/24/2013	4.11	4953.00
		7/29/2014	4.41	4952.70
S31-MW05	4956.89	10/24/2013	4.11	4952.78
		7/29/2014	4.61	4952.28
S31-MW06	4957.57	10/24/2013	4.20	4953.37
		7/29/2014	4.62	4952.95
Rider #1 Wellsite				
RD1-MW01	Not Measured	7/30/2014	7.62	Not Measured
RD1-MW02	Not Measured	7/30/2014	7.72	Not Measured
RD1-MW03R	Not Measured	7/30/2014	7.22	Not Measured
RD1-MW04	Not Measured	7/30/2014	7.7	Not Measured
RD1-MW05	Not Measured	7/30/2014	7.95	Not Measured
RD1-MW06	Not Measured	7/30/2014	4.75	Not Measured

*All survey information is in Datum: NAD 83, Colorado North Zone NAVD 88
**During 7/29/14 site visit S31-MW02 was filled with sediment. No water present.
Elevation is measured in feet above mean sea level
Depth to groundwater is mesured in feet below top of casing
NR - No Reading

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Sherwood #1 Wellhead					
				Sample ID	SH1-MW1-130318	SH1-MW01-131023	SH1-MW2-130318	SH1-MW02-131023	SH1-MW3-130318	SH1-MW03-131023
				Date	3/18/2013	10/23/2013	3/18/2013	10/23/2013	3/18/2013	10/23/2013
Volatile Organic Compounds										
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds										
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	**0.0091**	ND (0.0066)	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters										
7440-70-2	Calcium, Dissolved	---	---	mg/L	**92.1**	**82.8**	**101**	**91.1**	**92.8**	**84.2**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**110**	**107**	**99.7**	**96.4**	**107**	**106**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**2.57**	**1.63**	**3.06**	**1.85**	**2.26**	**1.68**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**118**	**110**	**117**	**111**	**115**	**107**
7440-24-6	Strontium	---	---	mg/L	**5.91**	**4.56**	**3.47**	**2.74**	**2.83**	**2.51**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**345**	**388**	**365**	**388**	**349**	**370**
	Alkalinity, Total as CaCO3	---	---	mg/L	**345**	**388**	**365**	**388**	**349**	**370**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	**1.2**	ND (1.0)	**1.2**	ND (1.0)	**1.1**
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**37.5**	**35.7**	**37.5**	**45.2**	**36.6**	**35.8**
	Nitrogen as Nitrate	---	10	mg/L	**8.3**	**8.6**	**7.9**	**10.6**	**5.7**	**7.8**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.0)	ND (0.50)	ND (0.50)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**8.4**	**8.6**	**8**	**10.6**	**5.8**	**7.8**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**486**	**415**	**431**	**428**	**452**	**425**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters										
	Specific Conductance	---	---	umhos/cm	**1590**	**1450**	**1570**	**1500**	**1600**	**1440**
	pH	---	6.5 - 8.5	Std. Units	**7.6**	**7.0**	**7.5**	**7.0**	**7.6**	**7.0**

COGCC - Colorado Oil and Gas Conservation Commission
CDPHE - Colorado Department of Public Health and Environment
mg/L - milligrams per liter
ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Sherwood #2 Wellhead		
				Sample ID	SH2-MW1-130318	SH2-MW2-130318	SH2-MW3-130318
				Date	3/18/2013	3/18/2013	3/18/2013
Volatile Organic Compounds							
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds							
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters							
7440-70-2	Calcium, Dissolved	---	---	mg/L	**189**	**225**	**220**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**121**	**121**	**115**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**3.86**	**5.72**	**4.69**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**102**	**111**	**104**
7440-24-6	Strontium	---	---	mg/L	**3.44**	**3.87**	**4.52**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**345**	**315**	**324**
	Alkalinity, Total as CaCO3	---	---	mg/L	**345**	**315**	**324**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**40.2**	**43.8**	**44.8**
	Nitrogen as Nitrate	---	10	mg/L	**11.4**	**13.6**	**13**
	Nitrogen as Nitrite	---	1	mg/L	**0.63**	ND (0.50)	ND (0.50)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**12**	**13.8**	**13.1**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**799**	**824**	**847**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters							
	Specific Conductance	---	---	umhos/cm	**1940**	**2060**	**2080**
	pH	---	6.5 - 8.5	Std. Units	**7.5**	**7.4**	**7.4**

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Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	City of Longmont #1 Wellhead		
				Sample ID	CL1-MW1-130320	CL1-MW2-130320	CL1-MW3-130321
				Date	3/20/2013	3/20/2013	3/21/2013
Volatile Organic Compounds							
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds							
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters							
7440-70-2	Calcium, Dissolved	---	---	mg/L	**81.3**	**77**	**85.5**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**72.2**	**67.4**	**75.1**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**2.83**	**2.1**	**2.83**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**61.7**	**60.4**	**63.6**
7440-24-6	Strontium	---	---	mg/L	**2.38**	**4.26**	**3.45**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**377**	**354**	**389**
	Alkalinity, Total as CaCO3	---	---	mg/L	**377**	**354**	**389**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**34.1**	**32.7**	**35.3**
	Nitrogen as Nitrate	---	10	mg/L	**13.9**	**2.6**	**14.8**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.50)	ND (0.20)	ND (0.50)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**13.9**	**2.6**	**14.9**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**182**	**171**	**189**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters							
	Specific Conductance	---	---	umhos/cm	**1160**	**1090**	**1130**
	pH	---	6.5 - 8.5	Std. Units	**7.9**	**7.9**	**7.7**

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CDPHE - Colorado Department of Public Health and Environment
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ND - Parameter not detected above the laboratory detection limit (Detection Limit)
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Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Serafini Gas Unit					
				Sample ID	SGU-MW1-130320	SGU-MW01-131022	SGU-MW2-130321	SGU-MW02-131022	SGU-MW3-130321	SGU-MW03-131022
				Date	3/20/2013	10/22/2013	3/21/2013	10/22/2013	3/21/2013	10/22/2013
Volatile Organic Compounds										
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds										
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	**0.0087**	ND (0.0066)	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters										
7440-70-2	Calcium, Dissolved	---	---	mg/L	**81.4**	**77.2**	**92.6**	**88.5**	**88.2**	**96.1**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	**0.208**	ND (0.050)	**0.381**	ND (0.050)	**0.0760**
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**53.7**	**54.7**	**57.8**	**54.5**	**49**	**50.5**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**3.59**	**2.88**	**3.39**	**2.63**	**3.94**	**1.91**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**67.2**	**62.5**	**78.6**	**53.3**	**47.7**	**50.3**
7440-24-6	Strontium	---	---	mg/L	**2.96**	**2.32**	**1.72**	**3.12**	**4.07**	**2.47**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**328**	**345**	**359**	**364**	**632**	**365**
	Alkalinity, Total as CaCO3	---	---	mg/L	**328**	**345**	**359**	**364**	**632**	**365**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**29.8**	**30.3**	**34.2**	**33.2**	**28.3**	**34.5**
	Nitrogen as Nitrate	---	10	mg/L	**5.9**	**7.4**	**7.2**	**8.4**	**4.4**	**10.1**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.20)	ND (0.50)	ND (0.20)	ND (0.50)	ND (0.10)	ND (1.0)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**5.9**	**7.4**	**7.3**	**8.4**	**4.4**	**10.1**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**191**	**292**	**228**	**243**	**152**	**252**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters										
	Specific Conductance	---	---	umhos/cm	**1060**	**1190**	**1100**	**1150**	**917**	**1160**
	pH	---	6.5 - 8.5	Std. Units	**7.8**	**7.3**	**7.9**	**7.3**	**7.6**	**7.3**

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umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Powell #1 Wellhead		
				Sample ID	PL1-MW1-130320	PL1-MW2-130319	PL1-MW3-130319
				Date	3/20/2013	3/19/2013	3/19/2013
Volatile Organic Compounds							
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds							
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters							
7440-70-2	Calcium, Dissolved	---	---	mg/L	**95.3**	**106**	**86**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**73.2**	**75.9**	**63**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**2.28**	**2.33**	**3.02**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**65.3**	**115**	**58.6**
7440-24-6	Strontium	---	---	mg/L	**1.82**	**1.83**	**1.9**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**295**	**311**	**296**
	Alkalinity, Total as CaCO3	---	---	mg/L	**295**	**311**	**296**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**31.8**	**32.8**	**32.3**
	Nitrogen as Nitrate	---	10	mg/L	**5.9**	ND (0.10)	**0.58**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.20)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**5.9**	ND (0.10)	**0.57**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**369**	**484**	**265**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters							
	Specific Conductance	---	---	umhos/cm	**1280**	**1480**	**1090**
	pH	---	6.5 - 8.5	Std. Units	**7.9**	**7.4**	**7.4**

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mg/L - milligrams per liter
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Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Evans #6 Wellhead								
				Sample ID	E6W-MW01-130322	E6W-MW01-131023	E6W-MW01	E6W-MW02-130322	E6W-MW02-131023	E6W-MW02	E6W-MW03-130322	E6W-MW03-131023	E6W-MW03
				Date	3/22/2013	10/23/2013	07/28/2014	3/22/2013	10/23/2013	7/28/2014	3/22/2013	10/23/2013	07/28/2014
Volatile Organic Compounds													
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds													
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	ND (0.0066)	**0.0278**	ND (0.0066)	ND (0.0066)	**0.0141**	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters													
7440-70-2	Calcium, Dissolved	---	---	mg/L	**183**	**281**	**206**	**207**	**329**	**187**	**192**	**363**	**264**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**126**	**182**	**133**	**175**	**279**	**139**	**150**	**255**	**167**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**6.52**	**7.58**	**6.41**	**10.6**	**42.4**	**22.7**	**9.22**	**31.1**	**13.1**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**157**	**236**	**181**	**212**	**419**	**189**	**184**	**333**	**217**
7440-24-6	Strontium	---	---	mg/L	**4.04**	**5.52**	**4.19**	**5.94**	**7.28**	**4.48**	**5.73**	**7.09**	**5.34**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**307**	**381**	**326**	**312**	**426**	**309**	**312**	**367**	**315**
	Alkalinity, Total as CaCO3	---	---	mg/L	**307**	**381**	**326**	**321**	**426**	**309**	**312**	**367**	**315**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)	**1.5**	**1.0**	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**32.7**	**72.2**	**50.0**	**34.4**	**110**	**38.4**	**31.1**	**96.2**	**52.4**
	Nitrogen as Nitrate	---	10	mg/L	**0.44**	**5.0**	**0.84**	ND (0.10)	**14.5**	**2.6**	**0.11**	**6.2**	**1.9**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.10)	ND (0.20)	ND (0.10)	ND (0.10)	ND (1.0)	ND (0.10)	ND (0.10)	ND (0.20)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**0.44**	**5.0**	**0.84**	ND (0.10)	**14.5**	**2.6**	**0.12**	**6.2**	**1.9**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**987**	**1710**	**1130**	**1380**	**2630**	**1350**	**1130**	**2420**	**1550**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	NS	ND (0.050)	ND (0.050)	NS	ND (0.050)	ND (0.050)	NS
General Parameters													
	Specific Conductance	---	---	umhos/cm	**2070**	**4960**	**2074**	**2200**	**7000**	**2358**	**2280**	**6320**	**2635**
	pH	---	6.5 - 8.5	Std. Units	**7.6**	**6.0**	**7.18**	**7.8**	**6.0**	**7.27**	**7.6**	**6.0**	**7.15**

COGCC - Colorado Oil and Gas Conservation Commission
CDPHE - Colorado Department of Public Health and Environment
mg/L - milligrams per liter
ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Evans #6 Tank Battery								
				Sample ID	E6T-MW01-130322	E6T-MW01-131023	E6T-MW01	E6T-MW02-130322	E6T-MW02-131023	E6T-MW02	E6T-MW03-130322	E6T-MW03-131023	E6T-MW03
				Date	3/22/2013	10/23/2013	07/28/2014	3/22/2013	10/23/2013	07/28/2014	3/22/2013	10/23/2013	07/28/2014
Volatile Organic Compounds													
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds													
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	ND (0.0066)	**0.0076**	ND (0.0066)	ND (0.0066)	**0.0068**	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters													
7440-70-2	Calcium, Dissolved	---	---	mg/L	**326**	**306**	**280**	**238**	**271**	**393**	**354**	**516**	**530**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	**0.212**	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**285**	**256**	**215**	**181**	**210**	**297**	**350**	**644**	**680**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**12.1**	**6.61**	**5.80**	**7.41**	**6.58**	**7.56**	**11**	**8.43**	**7.48**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**593**	**666**	**446**	**247**	**334**	**356**	**500**	**992**	**1010**
7440-24-6	Strontium	---	---	mg/L	**6.14**	**4.03**	**4.54**	**4.52**	**4.45**	**7.04**	**7.86**	**10.1**	**2.51**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**334**	**401**	**340**	**346**	**391**	**346**	**524**	**732**	**468**
	Alkalinity, Total as CaCO3	---	---	mg/L	**334**	**401**	**340**	**346**	**391**	**346**	**524**	**732**	**468**
24959-67-9	Bromide	---	---	mg/L	**1.2**	ND (1.0)	ND (1.0)	**1.2**	ND (1.0)	ND (1.0)	**1.3**	**1.2**	**1.1**
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**112**	**111**	**104**	**63.9**	**68.6**	**113**	**103**	**249**	**254**
	Nitrogen as Nitrate	---	10	mg/L	**0.93**	ND (0.10)	ND (0.10)	ND (0.10)	**16.6**	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrite	---	1	mg/L	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (1.0)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**0.93**	ND (0.10)	ND (0.10)	ND (0.10)	**17.0**	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**3060**	**3190**	**2840**	**1560**	**1770**	**3080**	**2650**	**5200**	**6240**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	NS	ND (0.050)	ND (0.050)	NS	ND (0.050)	ND (0.050)	NS
General Parameters													
	Specific Conductance	---	---	umhos/cm	**5030**	**8280**	**4100**	**2960**	**5640**	**3968**	**4830**	**13200**	**7162**
	pH	---	6.5 - 8.5	Std. Units	**7.8**	**7.0**	**7.47**	**7.6**	**6.0**	**7.44**	**7.4**	**6.0**	**7.35**

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umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Longmont 8-10K Wellhead		
				Sample ID	LG8-MW01-130322	LG8-MW02-130322	LG8-MW03-130322
				Date	3/22/2013	3/22/2013	3/22/2013
Volatile Organic Compounds							
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds							
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters							
7440-70-2	Calcium, Dissolved	---	---	mg/L	**74.5**	**85.1**	**87**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**79.1**	**88.6**	**94.1**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**5.87**	**5.39**	**5.65**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**106**	**131**	**122**
7440-24-6	Strontium	---	---	mg/L	**3.03**	**1.97**	**2.87**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**204**	**234**	**244**
	Alkalinity, Total as CaCO3	---	---	mg/L	**204**	**234**	**244**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**40.1**	**42.9**	**42.1**
	Nitrogen as Nitrate	---	10	mg/L	**0.23**	**0.28**	ND (0.10)
	Nitrogen as Nitrite	---	1	mg/L	ND (0.10)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**0.24**	**0.29**	ND (0.10)
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**496**	**548**	**530**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters							
	Specific Conductance	---	---	umhos/cm	**1350**	**1540**	**1530**
	pH	---	6.5 - 8.5	Std. Units	**7.5**	**7.6**	**7.4**

COGCC - Colorado Oil and Gas Conservation Commission
CDPHE - Colorado Department of Public Health and Environment
mg/L - milligrams per liter
ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Domenico #1 Wellsite									
				Sample ID	DM1-MW1-130319	DM-MW01 (Split)	DMI-MW01	DM1-MW2-130319	DM-MW02 (Split)	DMI-MW02	DM1-MW3-130319	DM-MW03 (Split)	DM1-MW03 (Resample)	DMI-MW03
				Date	3/19/2013	3/19/2013	07/29/2014	3/19/2013	3/19/2013	07/29/2014	3/19/2013	3/19/2013	6/24/2013	07/29/2014
Volatile Organic Compounds														
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	NS	ND (0.0030)
Other Organic Compounds														
74-82-8	Methane	---	---	mg/L	**0.0253**	**0.051**	ND (0.0066)	**0.0071**	**17.8**	**0.0291**	ND (0.0066)	**5.82**	NS	**0.0119**
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0217)	ND (0.0062)	ND (0.0062)	ND (0.0217)	ND (0.0062)	ND (0.0062)	ND (0.0217)	NS	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0287)	ND (0.0062)	ND (0.0062)	ND (0.0287)	ND (0.0062)	ND (0.0062)	ND (0.0287)	NS	ND (0.0062)
Inorganic Parameters														
7440-70-2	Calcium, Dissolved	---	---	mg/L	**86**	**87**	**52.7**	**57.7**	**57.7**	**114**	**99.2**	**129**	NS	**88.7**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.2)	ND (0.050)	ND (0.050)	ND (0.2)	ND (0.050)	ND (0.050)	**0.0247**	NS	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**93.1**	**94.8**	**56.9**	**84.8**	**88.8**	**93.2**	**55.1**	**66.9**	NS	**51.5**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**3.4**	**3.23**	**1.64**	**6.21**	**5.64**	**6.46**	**3.18**	**4.04**	NS	**1.76**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**254**	**250**	**175**	**214**	**232**	**276**	**161**	**179**	NS	**145**
7440-24-6	Strontium	---	---	mg/L	**1.83**	**1.02**	**0.853**	**0.965**	**0.736**	**1.59**	**2.14**	**1.31**	NS	**1.11**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	NS	ND (20.0)	ND (20.0)	NS	ND (20.0)	ND (20.0)	NS	NS	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**484**	NS	**305**	**307**	NS	**525**	**284**	NS	NS	**275**
	Alkalinity, Total as CaCO3	---	---	mg/L	**484**	**516**	**305**	**307**	**318**	**525**	**284**	**325**	NS	**275**
24959-67-9	Bromide	---	---	mg/L	**4.8**	**6.28**	**3.0**	**3.4**	**3.8**	**4.6**	**2.2**	**2.69**	NS	**2.7**
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**136**	**155**	**92.0**	**123**	**145**	**157**	**91.5**	**119**	NS	**91.1**
	Nitrogen as Nitrate	---	10	mg/L	ND (0.10)	**0.0452**	ND (0.10)	ND (0.10)	**0.109**	**1.4**	**0.27**	**0.322**	NS	**2.8**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.10)	**0.0169**	ND (0.10)	ND (0.10)	**0.166**	**0.13**	ND (0.10)	**0.0486**	NS	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	ND (0.10)	NS	ND (0.10)	ND (0.10)	NS	**1.6**	**0.3**	NS	NS	**2.8**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**494**	**531**	**373**	**492**	**554**	**685**	**448**	**571**	NS	**423**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	NS	NS	ND (0.050)	NS	NS	ND (0.050)	NS	NS	NS
General Parameters														
	Specific Conductance	---	---	umhos/cm	**1970**	**2240**	**1023**	**1720**	**1970**	**2215**	**1640**	**1790**	NS	**1293**
	pH	---	6.5 - 8.5	Std. Units	**7.5**	**7.53**	**7.36**	**7.5**	**7.49**	**7.13**	**7.4**	**7.27**	NS	**7.09**

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mg/L - milligrams per liter
ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Stamp 31-2C Wellsite						
				Sample ID	S31-MW01-130322	MW01-131024	MW01-140729	S31-MW02-130322	MW02-131024	MW03-131024	MW03-140729
				Date	3/22/2013	10/24/2013	07/29/2014	3/22/2013	10/24/2013	10/24/2013	07/29/2014
Volatile Organic Compounds											
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	**0.0946**	**0.0549**	**0.0062**	**0.0018**
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	**0.0022**	ND (0.0010)	ND (0.0010)	**0.0102**	**0.0013**	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	**0.0110**	**0.0232**	ND (0.0010)	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
Other Organic Compounds											
74-82-8	Methane	---	---	mg/L	**0.0137**	**0.101**	**0.142**	**0.0323**	**0.0506**	**0.0485**	**0.111**
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	**0.0119**	**0.0169**	**0.0076**	**0.0236**
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters											
7440-70-2	Calcium, Dissolved	---	---	mg/L	**365**	**340**	**356**	**377**	**352**	**362**	**383**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	**0.196**	**0.192**	ND (0.050)	ND (0.050)	**0.204**	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**1400**	**814**	**986**	**872**	**655**	**814**	**750**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**26.5**	**14.5**	**16.2**	**18.4**	**12.3**	**7.83**	**8.72**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**2850**	**2060**	**2680**	**1940**	**1600**	**1860**	**1520**
7440-24-6	Strontium	---	---	mg/L	**9.7**	**8.01**	**8.99**	**7.99**	**6.28**	**11.5**	**9.85**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (40.0)	ND (40.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**606**	**642**	**829**	**860**	**771**	**1340**	**1410**
	Alkalinity, Total as CaCO3	---	---	mg/L	**606**	**642**	**829**	**860**	**771**	**1340**	**1410**
24959-67-9	Bromide	---	---	mg/L	**1.8**	**3.6**	**3.1**	**1.5**	**2.4**	**2.3**	**1.8**
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**381**	**369**	**725**	**150**	**181**	**253**	**176**
	Nitrogen as Nitrate	---	10	mg/L	**2.8**	**1.5**	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrite	---	1	mg/L	**0.32**	**0.16**	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**3.1**	**1.6**	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**13200**	**8340**	**8930**	**9110**	**6330**	**7050**	**6480**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	NS	ND (0.050)	ND (0.050)	ND (0.050)	NS
General Parameters											
	Specific Conductance	---	---	umhos/cm	**17200**	**5670**	**11866**	**12500**	**4060**	**4760**	**8796**
	pH	---	6.5 - 8.5	Std. Units	**7.5**	**7.2**	**7.13**	**7.2**	**7.0**	**7.1**	**7.09**

COGCC - Colorado Oil and Gas Conservation Commission
CDPHE - Colorado Department of Public Health and Environment
mg/L - milligrams per liter
ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

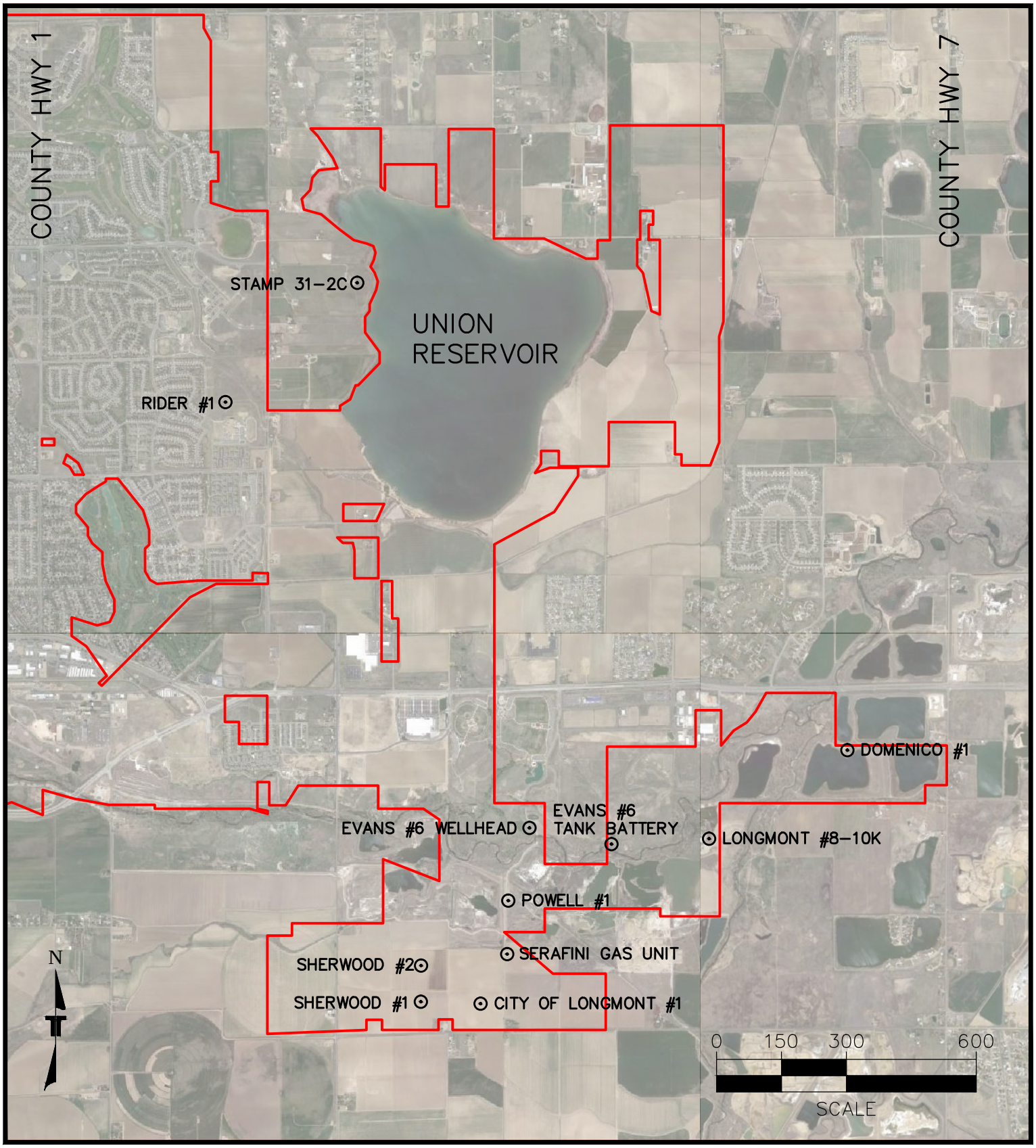
CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Stamp 31-2C Wellsite								
				Sample ID	S31-MW04-130322	MW04-131024	MW04-140729	MW04-140731	MW05-131024	MW05-140729	MW05-140730	MW06-131024	MW06-140729
				Date	3/22/2013	10/24/2013	07/29/2014	07/31/2014	10/24/2013	07/29/2014	07/30/2014	10/24/2013	07/29/2014
Volatile Organic Compounds													
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)	ND (0.0010)	NS	ND (0.0010)	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)	NS	ND (0.0030)	ND (0.0030)	NS	ND (0.0030)	ND (0.0030)
Other Organic Compounds													
74-82-8	Methane	---	---	mg/L	ND (0.0066)	ND (0.0066)	ND (0.0066)	NS	ND (0.0066)	ND (0.0066)	NS	ND (0.0066)	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	NS	ND (0.0062)	ND (0.0062)	NS	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	NS	ND (0.0062)	ND (0.0062)	NS	ND (0.0062)	ND (0.0062)
Inorganic Parameters													
7440-70-2	Calcium, Dissolved	---	---	mg/L	**383**	**345**	NS	**382**	**361**	NS	**362**	**366**	**386**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	**0.216**	NS	ND (0.050)	**0.0794**	NS	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**759**	**710**	NS	**796**	**627**	NS	**554**	**497**	**554**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**19.6**	**13.4**	NS	**10.6**	**12.0**	NS	**9.36**	**11.1**	**9.16**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**1380**	**1660**	NS	**1560**	**1250**	NS	**1030**	**1120**	**1010**
7440-24-6	Strontium	---	---	mg/L	**9.55**	**7.70**	NS	**8.43**	**6.94**	NS	**7.14**	**6.74**	**7.13**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)	NS	ND (20.0)	ND (20.0)	NS	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**480**	**497**	**480**	NS	**464**	**434**	NS	**485**	**465**
	Alkalinity, Total as CaCO3	---	---	mg/L	**480**	**497**	**480**	NS	**464**	**434**	NS	**485**	**465**
24959-67-9	Bromide	---	---	mg/L	**4.4**	**1.5**	**2.4**	NS	**1.1**	**1.4**	NS	**1.0**	**1.5**
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**85.2**	**75.1**	**105**	NS	**60.4**	**59.4**	NS	**56.5**	**66.7**
	Nitrogen as Nitrate	---	10	mg/L	**1.9**	**0.46**	**0.75**	NS	**0.17**	**0.23**	NS	ND (0.10)	ND (0.10)
	Nitrogen as Nitrite	---	1	mg/L	**0.21**	ND (0.10)	ND (0.10)	NS	ND (0.10)	ND (0.10)	NS	ND (0.10)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**2.1**	**0.46**	**0.75**	NS	**0.17**	**0.23**	NS	ND (0.10)	ND (0.10)
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**7180**	**6710**	**6960**	NS	**6060**	**5740**	NS	**5380**	**5540**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	NS	NS	ND (0.050)	NS	NS	ND (0.050)	NS
General Parameters													
	Specific Conductance	---	---	umhos/cm	**9980**	**4250**	**8258**	**10164**	**3770**	**6148**	NS	**3440**	**6147**
	pH	---	6.5 - 8.5	Std. Units	**7.5**	**7.3**	**7.42**	**7.49**	**7.2**	**7.37**	NS	**7.2**	**7.33**

COGCC - Colorado Oil and Gas Conservation Commission
CDPHE - Colorado Department of Public Health and Environment
mg/L - milligrams per liter
ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard

Table 2 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25147063

CAS #	Parameter	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Rider #1 Wellsite					
				Sample ID	RD1-MW01-140730	RD1-MW02-140730	RD1-MW03R-140730	RD1-MW04-140730	RD1-MW05-140730	RD1-MW06-140730
				Date	07/30/2014	07/30/2014	07/30/2014	07/30/2014	07/30/2014	07/30/2014
Volatile Organic Compounds										
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.010)	ND (0.0010)	ND (0.0010)
108-88-3	Toluene	0.56 to 1	0.56 to 1[M]	mg/L	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.010)	ND (0.0010)	ND (0.0010)
100-41-4	Ethylbenzene	0.7	0.7	mg/L	ND (0.0010)	ND (0.0010)	**0.0025**	**0.0778**	**0.0088**	ND (0.0010)
1330-20-7	Xylenes (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	**0.0133**	**1.14**	**0.0594**	ND (0.0030)
Other Organic Compounds										
74-82-8	Methane	---	---	mg/L	ND (0.0066)	**0.0094**	**0.0347**	**0.0316**	**0.406**	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
74-85-1	Ethene	---	---	mg/L	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)	ND (0.0062)
Inorganic Parameters										
7440-70-2	Calcium, Dissolved	---	---	mg/L	**86.9**	**88.0**	**84.8**	**92.4**	**82.1**	**82.7**
7439-89-6	Iron, Dissolved	---	0.3 to 5[M]	mg/L	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**74.8**	**80.8**	**78.2**	**81.4**	**76.2**	**79.9**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**2.78**	**1.89**	**2.12**	**2.33**	**2.47**	**1.90**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**127**	**104**	**100**	**114**	**102**	**92.7**
7440-24-6	Strontium	---	---	mg/L	**3.18**	**3.06**	**3.53**	**3.37**	**3.08**	**3.60**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**407**	**471**	**555**	**552**	**584**	**536**
	Alkalinity, Total as CaCO3	---	---	mg/L	**407**	**471**	**555**	**552**	**584**	**536**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**34.5**	**31.8**	**31.5**	**33.7**	**31.8**	**38.6**
	Nitrogen as Nitrate	---	10	mg/L	**4.8**	**3.8**	**3.8**	**4.2**	**3.7**	**2.2**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**4.8**	**3.8**	**3.8**	**4.2**	**3.7**	**2.2**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**323**	**305**	**290**	**320**	**291**	**306**
18496-25-8	Sulfide, Total	---	---	mg/L	NS	NS	NS	NS	NS	NS
General Parameters										
	Specific Conductance	---	---	umhos/cm	**1115**	**1099**	**1028**	**1109**	**1045**	**1077**
	pH	---	6.5 - 8.5	Std. Units	**7.03**	**7.21**	**7.35**	**7.2**	**7.31**	**7.3**

COGCC - Colorado Oil and Gas Conservation Commission
CDPHE - Colorado Department of Public Health and Environment
mg/L - milligrams per liter
ND - Parameter not detected above the laboratory detection limit (Detection Limit)
Bold indicates detected constituents
Gray shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminant level
NS - Not Sampled
Bkg - Background
--- indicates no regulatory standard



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DRAWN:	SJB
CHECKED:	JPA
APPROVED:	JCD
PROJECT NO:	25147063
SCALE:	AS SHOWN
FILE NAME:	Figure1.dwg
DATE:	09.16.2014

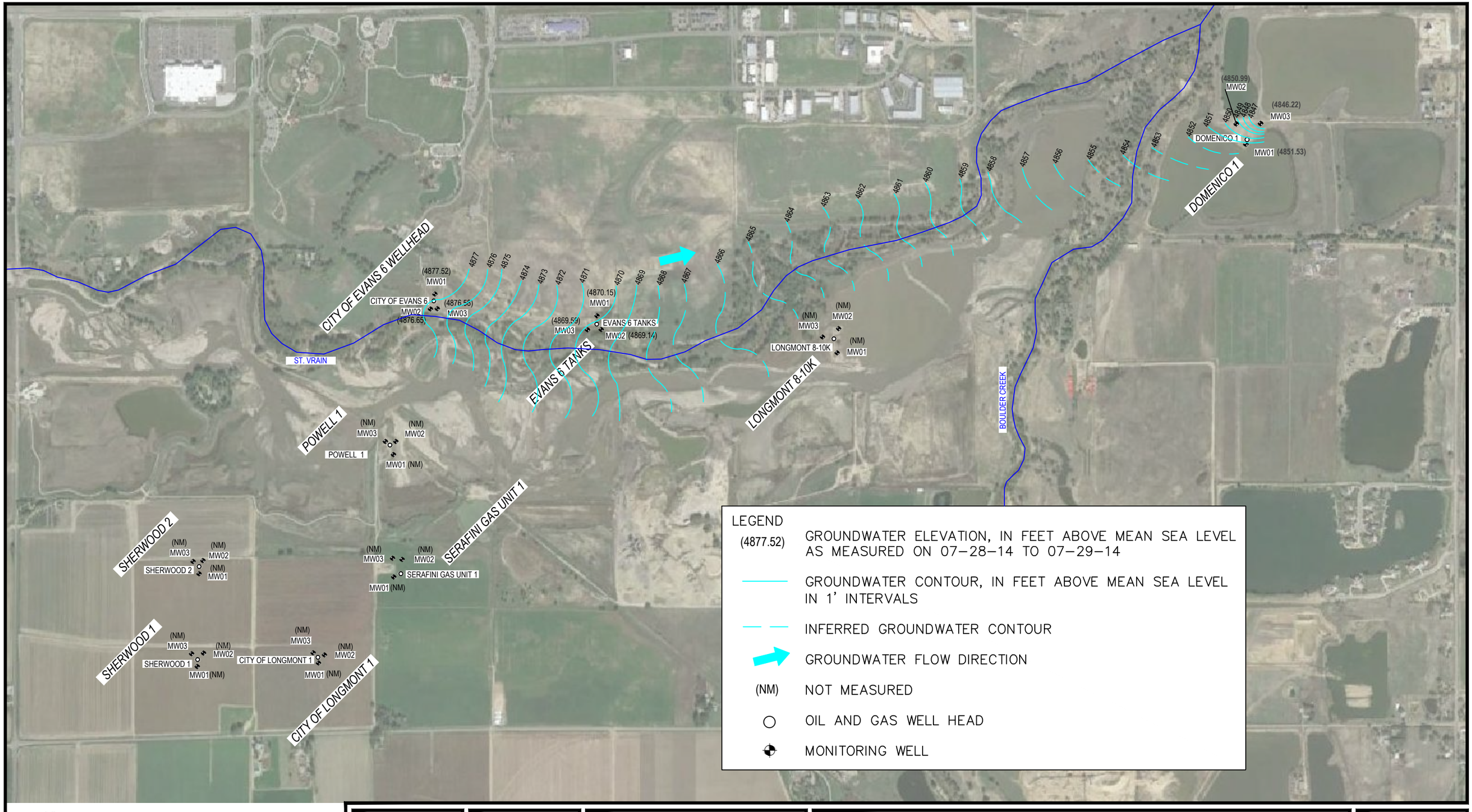
Terracon
Consulting Engineers & Scientists
10625 W I-70 FRONTAGE RD N, SUITE 3 WHEAT RIDGE, CO 80033
PH. (303) 423-3300 FAX. (303) 423-3353

WELL SITE LOCATIONS MAP

GROUNDWATER QUALITY MONITORING
CITY OF LONGMONT
LONGMONT, COLOROADO

N:\Projects\2014\25147063\Working Files\Diagrams-Drawings-Figures

Figure No: 1



LEGEND

(4877.52)	GROUNDWATER ELEVATION, IN FEET ABOVE MEAN SEA LEVEL AS MEASURED ON 07–28–14 TO 07–29–14
	GROUNDWATER CONTOUR, IN FEET ABOVE MEAN SEA LEVEL IN 1' INTERVALS
	INFERRED GROUNDWATER CONTOUR
	GROUNDWATER FLOW DIRECTION
(NM)	NOT MEASURED
	OIL AND GAS WELL HEAD
	MONITORING WELL

N

0 500 1000 2000 ft

SCALE

PROJECT MANAGER:	JPA
DRAWN BY:	SJB
CHECKED BY:	JPA
APPROVED BY:	JCD
PROJECT NO:	25147063
SCALE:	AS SHOWN
FILE NAME:	FIGURE 2.DWG
DATE:	09.16.2014

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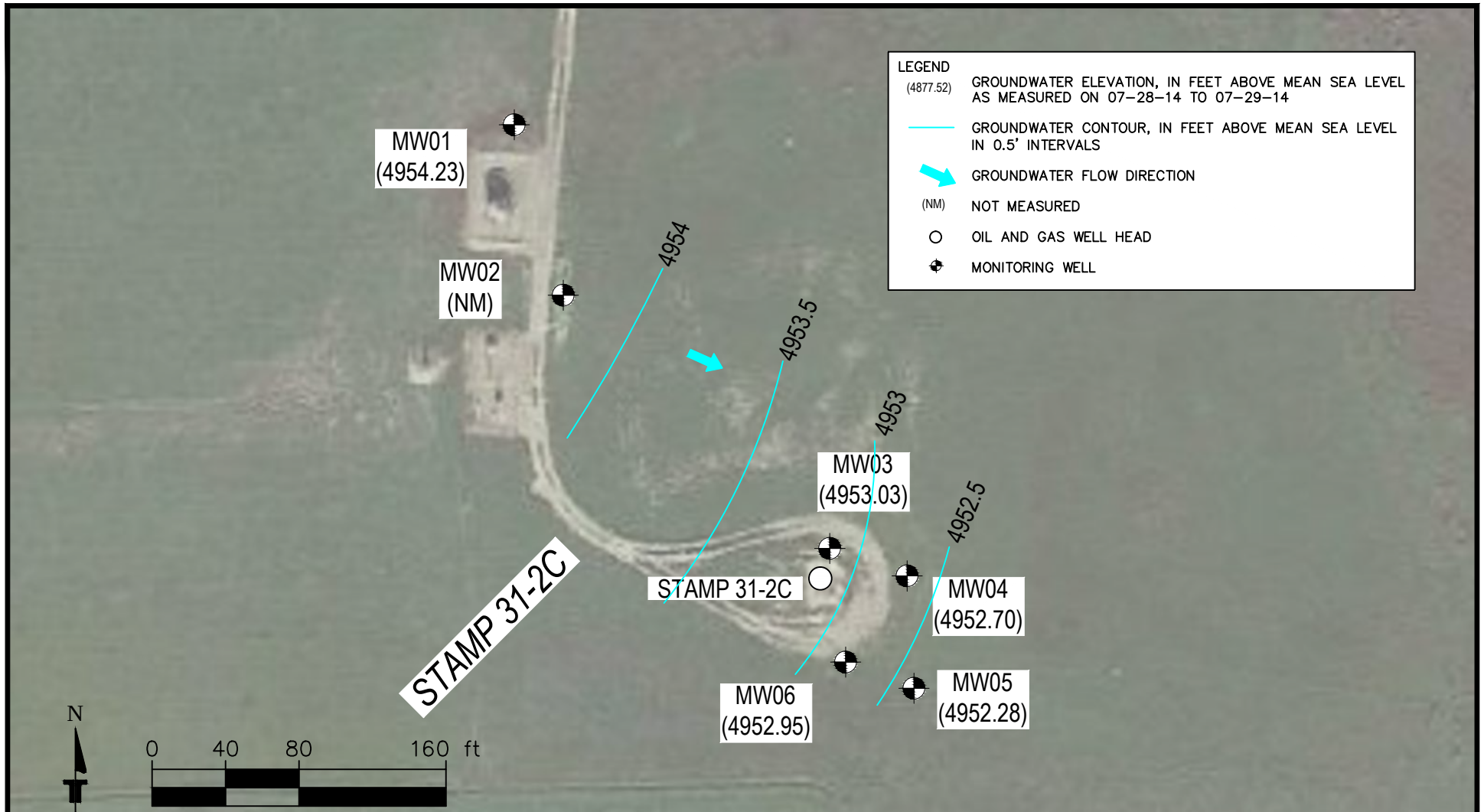
POTENTIOMETRIC SURFACE MAP - VARIOUS WELL SITES

GROUNDWATER QUALITY MONITORING
CITY OF LONGMONT
LONGMONT, COLORADO

N:\Projects\2014\25147063\Working Files\Diagrams–Drawings–Figures

Figure Number:

2


LEGEND
(4877.52) GROUNDWATER ELEVATION, IN FEET ABOVE MEAN SEA LEVEL AS MEASURED ON 07-28-14 TO 07-29-14
GROUNDWATER CONTOUR, IN FEET ABOVE MEAN SEA LEVEL IN 0.5' INTERVALS
GROUNDWATER FLOW DIRECTION
(NM) NOT MEASURED
OIL AND GAS WELL HEAD
MONITORING WELL
MW01 (4954.23)
MW02 (NM)
4954
4953.5
4953
4952.5
MW03 (4953.03)
STAMP 31-2C
STAMP 31-2C
MW04 (4952.70)
MW05 (4952.28)
MW06 (4952.95)
N
0 40 80 160 ft

APPENDIX B
ANALYTICAL REPORT AND CHAIN OF CUSTODY

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 05, 2014

Jon Anstey
Terracon
10625 W. I-70 Frontage Rd N
Suite 3
Wheat Ridge, CO 80033

RE: Project: O&G Wellsite GW
Pace Project No.: 60174579

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on July 29, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: O&G Wellsite GW
Pace Project No.: 60174579

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia DHHR #:9952C

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: O&G Wellsite GW
Pace Project No.: 60174579

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60174579001	**E6W-MW01**	Water	07/28/14 11:16	07/29/14 10:05
60174579002	**E6W-MW03**	Water	07/28/14 12:00	07/29/14 10:05
60174579003	**E6W-MW02**	Water	07/28/14 12:55	07/29/14 10:05
60174579004	**E6T-MW01**	Water	07/28/14 13:45	07/29/14 10:05
60174579005	**E6T-MW02**	Water	07/28/14 14:20	07/29/14 10:05
60174579006	**E6T-MW03**	Water	07/28/14 14:55	07/29/14 10:05

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SAMPLE ANALYTE COUNT

Project: O&G Wellsite GW
Pace Project No.: 60174579

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60174579001	**E6W-MW01**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174579002	**E6W-MW03**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174579003	**E6W-MW02**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174579004	**E6T-MW01**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174579005	**E6T-MW02**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174579006	**E6T-MW03**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: O&G Wellsite GW
Pace Project No.: 60174579

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010	JGP	5	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K

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ANALYTICAL RESULTS

Project: O&G Wellsite GW
Pace Project No.: 60174579

Sample: E6W-MW01 **Lab ID: 60174579001** Collected: 07/28/14 11:16 Received: 07/29/14 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 14:23	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 14:23	74-85-1	
Methane	ND	ug/L	6.6	1		07/31/14 14:23	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4190**	ug/L	10.0	1	07/30/14 12:00	07/31/14 13:10	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**206000**	ug/L	1000	10	07/31/14 16:10	08/04/14 15:52	7440-70-2	M1
Iron, Dissolved	ND	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:23	7439-89-6	
Magnesium, Dissolved	**133000**	ug/L	50.0	1	07/31/14 16:10	08/01/14 12:23	7439-95-4	M1
Potassium, Dissolved	**6410**	ug/L	500	1	07/31/14 16:10	08/01/14 12:23	7440-09-7	
Sodium, Dissolved	**181000**	ug/L	500	1	07/31/14 16:10	08/01/14 12:23	7440-23-5	M1
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/29/14 15:04	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/29/14 15:04	100-41-4	
Toluene	ND	ug/L	1.0	1		07/29/14 15:04	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/29/14 15:04	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	80-120	1		07/29/14 15:04	2037-26-5	
4-Bromofluorobenzene (S)	102	%	80-120	1		07/29/14 15:04	460-00-4	
1,2-Dichloroethane-d4 (S)	121	%	80-120	1		07/29/14 15:04	17060-07-0	S0
Preservation pH	**1.0**		0.10	1		07/29/14 15:04		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**326**	mg/L	20.0	1		07/31/14 09:33		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		07/31/14 09:33		
Alkalinity, Total as CaCO3	**326**	mg/L	20.0	1		07/31/14 09:33		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		07/30/14 14:38	24959-67-9	
Chloride	**50.0**	mg/L	5.0	5		07/31/14 12:33	16887-00-6	
Sulfate	**1130**	mg/L	100	100		07/31/14 13:16	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.84**	mg/L	0.10	1		07/29/14 15:32		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/29/14 15:32		M1
Nitrogen, NO2 plus NO3	**0.84**	mg/L	0.10	1		07/29/14 15:32		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: O&G Wellsite GW
Pace Project No.: 60174579

Sample: E6W-MW03 **Lab ID: 60174579002** Collected: 07/28/14 12:00 Received: 07/29/14 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 14:35	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 14:35	74-85-1	
Methane	ND	ug/L	6.6	1		07/31/14 14:35	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**5340**	ug/L	10.0	1	07/30/14 12:00	07/31/14 13:17	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**264000**	ug/L	1000	10	07/31/14 16:10	08/04/14 15:59	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:34	7439-89-6	
Magnesium, Dissolved	**167000**	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:34	7439-95-4	
Potassium, Dissolved	**13100**	ug/L	500	1	07/31/14 16:10	08/01/14 12:40	7440-09-7	
Sodium, Dissolved	**217000**	ug/L	500	1	07/31/14 16:10	08/01/14 12:40	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/29/14 15:19	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/29/14 15:19	100-41-4	
Toluene	ND	ug/L	1.0	1		07/29/14 15:19	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/29/14 15:19	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	80-120	1		07/29/14 15:19	2037-26-5	
4-Bromofluorobenzene (S)	102	%	80-120	1		07/29/14 15:19	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	80-120	1		07/29/14 15:19	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/29/14 15:19		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**315**	mg/L	20.0	1		07/31/14 09:37		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		07/31/14 09:37		
Alkalinity, Total as CaCO3	**315**	mg/L	20.0	1		07/31/14 09:37		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		07/30/14 15:21	24959-67-9	
Chloride	**52.4**	mg/L	5.0	5		08/01/14 10:49	16887-00-6	
Sulfate	**1550**	mg/L	200	200		07/31/14 14:00	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**1.9**	mg/L	0.10	1		07/29/14 15:34		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/29/14 15:34		
Nitrogen, NO2 plus NO3	**1.9**	mg/L	0.10	1		07/29/14 15:34		

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ANALYTICAL RESULTS

Project: O&G Wellsite GW
Pace Project No.: 60174579

Sample: E6W-MW02 **Lab ID: 60174579003** Collected: 07/28/14 12:55 Received: 07/29/14 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 15:07	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 15:07	74-85-1	
Methane	ND	ug/L	6.6	1		07/31/14 15:07	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4480**	ug/L	10.0	1	07/30/14 12:00	07/31/14 13:19	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**187000**	ug/L	1000	10	07/31/14 16:10	08/04/14 16:01	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:38	7439-89-6	
Magnesium, Dissolved	**139000**	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:38	7439-95-4	
Potassium, Dissolved	**22700**	ug/L	500	1	07/31/14 16:10	08/01/14 12:44	7440-09-7	
Sodium, Dissolved	**189000**	ug/L	500	1	07/31/14 16:10	08/01/14 12:44	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/29/14 15:34	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/29/14 15:34	100-41-4	
Toluene	ND	ug/L	1.0	1		07/29/14 15:34	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/29/14 15:34	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	80-120	1		07/29/14 15:34	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		07/29/14 15:34	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	80-120	1		07/29/14 15:34	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/29/14 15:34		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**309**	mg/L	20.0	1		07/31/14 09:43		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		07/31/14 09:43		
Alkalinity, Total as CaCO3	**309**	mg/L	20.0	1		07/31/14 09:43		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		07/30/14 15:50	24959-67-9	
Chloride	**38.4**	mg/L	5.0	5		08/01/14 11:18	16887-00-6	
Sulfate	**1350**	mg/L	200	200		07/31/14 15:41	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**2.6**	mg/L	0.10	1		07/29/14 15:35		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/29/14 15:35		
Nitrogen, NO2 plus NO3	**2.6**	mg/L	0.10	1		07/29/14 15:35		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: O&G Wellsite GW
Pace Project No.: 60174579

Sample: E6T-MW01 **Lab ID: 60174579004** Collected: 07/28/14 13:45 Received: 07/29/14 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 15:56	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 15:56	74-85-1	
Methane	ND	ug/L	6.6	1		07/31/14 15:56	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4540**	ug/L	10.0	1	07/30/14 12:00	07/31/14 13:22	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**280000**	ug/L	1000	10	07/31/14 16:10	08/04/14 16:04	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:41	7439-89-6	
Magnesium, Dissolved	**215000**	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:41	7439-95-4	
Potassium, Dissolved	**5800**	ug/L	500	1	07/31/14 16:10	08/01/14 12:48	7440-09-7	
Sodium, Dissolved	**446000**	ug/L	500	1	07/31/14 16:10	08/01/14 12:48	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/29/14 15:49	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/29/14 15:49	100-41-4	
Toluene	ND	ug/L	1.0	1		07/29/14 15:49	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/29/14 15:49	1330-20-7	
Surrogates								
Toluene-d8 (S)	95	%	80-120	1		07/29/14 15:49	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		07/29/14 15:49	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	80-120	1		07/29/14 15:49	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/29/14 15:49		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**340**	mg/L	20.0	1		07/31/14 09:58		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		07/31/14 09:58		
Alkalinity, Total as CaCO3	**340**	mg/L	20.0	1		07/31/14 09:58		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		07/30/14 16:04	24959-67-9	
Chloride	**104**	mg/L	10.0	10		08/01/14 11:33	16887-00-6	
Sulfate	**2840**	mg/L	500	500		07/31/14 16:09	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		07/29/14 15:36		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/29/14 15:36		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		07/29/14 15:36		

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ANALYTICAL RESULTS

Project: O&G Wellsite GW
Pace Project No.: 60174579

Sample: E6T-MW02 **Lab ID: 60174579005** Collected: 07/28/14 14:20 Received: 07/29/14 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 16:19	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 16:19	74-85-1	
Methane	ND	ug/L	6.6	1		07/31/14 16:19	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**7040**	ug/L	10.0	1	07/30/14 12:00	07/31/14 13:24	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**393000**	ug/L	1000	10	07/31/14 16:10	08/04/14 16:06	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:45	7439-89-6	
Magnesium, Dissolved	**297000**	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:45	7439-95-4	
Potassium, Dissolved	**7560**	ug/L	500	1	07/31/14 16:10	08/01/14 12:52	7440-09-7	
Sodium, Dissolved	**356000**	ug/L	500	1	07/31/14 16:10	08/01/14 12:52	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/29/14 16:04	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/29/14 16:04	100-41-4	
Toluene	ND	ug/L	1.0	1		07/29/14 16:04	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/29/14 16:04	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	80-120	1		07/29/14 16:04	2037-26-5	
4-Bromofluorobenzene (S)	101	%	80-120	1		07/29/14 16:04	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	80-120	1		07/29/14 16:04	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/29/14 16:04		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**346**	mg/L	20.0	1		07/31/14 10:03		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		07/31/14 10:03		
Alkalinity, Total as CaCO3	**346**	mg/L	20.0	1		07/31/14 10:03		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		07/30/14 16:19	24959-67-9	
Chloride	**113**	mg/L	10.0	10		08/01/14 13:05	16887-00-6	
Sulfate	**3080**	mg/L	500	500		07/31/14 16:38	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		07/29/14 15:37		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/29/14 15:37		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		07/29/14 15:37		

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ANALYTICAL RESULTS

Project: O&G Wellsite GW
Pace Project No.: 60174579

Sample: E6T-MW03 **Lab ID: 60174579006** Collected: 07/28/14 14:55 Received: 07/29/14 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 16:30	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 16:30	74-85-1	
Methane	ND	ug/L	6.6	1		07/31/14 16:30	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**2510**	ug/L	10.0	1	07/30/14 12:00	07/31/14 13:27	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**530000**	ug/L	1000	10	07/31/14 16:10	08/04/14 16:08	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	07/31/14 16:10	08/04/14 12:49	7439-89-6	
Magnesium, Dissolved	**680000**	ug/L	500	10	07/31/14 16:10	08/04/14 13:09	7439-95-4	
Potassium, Dissolved	**7480**	ug/L	500	1	07/31/14 16:10	08/01/14 12:56	7440-09-7	
Sodium, Dissolved	**1010000**	ug/L	5000	10	07/31/14 16:10	08/04/14 13:09	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/29/14 16:19	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/29/14 16:19	100-41-4	
Toluene	ND	ug/L	1.0	1		07/29/14 16:19	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/29/14 16:19	1330-20-7	
Surrogates								
Toluene-d8 (S)	84	%	80-120	1		07/29/14 16:19	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		07/29/14 16:19	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	80-120	1		07/29/14 16:19	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/29/14 16:19		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**468**	mg/L	20.0	1		07/31/14 10:14		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		07/31/14 10:14		
Alkalinity, Total as CaCO3	**468**	mg/L	20.0	1		07/31/14 10:14		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.1**	mg/L	1.0	1		07/30/14 16:33	24959-67-9	
Chloride	**254**	mg/L	50.0	50		08/01/14 13:20	16887-00-6	
Sulfate	**6240**	mg/L	1000	1000		07/31/14 17:07	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		07/29/14 15:38		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/29/14 15:38		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		07/29/14 15:38		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

QC Batch: AIR/20926 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

METHOD BLANK: 1748515 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	07/31/14 12:07	
Ethene	ug/L	ND	6.2	07/31/14 12:07	
Methane	ug/L	ND	6.6	07/31/14 12:07	

LABORATORY CONTROL SAMPLE & LCSD: 1748516 1748517

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	109	113	96	99	85-115	4	20	
Ethene	ug/L	106	102	105	96	99	85-115	3	20	
Methane	ug/L	60.7	58.5	60.5	96	100	85-115	3	20	

SAMPLE DUPLICATE: 1748518

Parameter	Units	92210975012 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	ND		20	

SAMPLE DUPLICATE: 1748519

Parameter	Units	60174579004 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	5.6J		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

QC Batch: MPRP/28275 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

METHOD BLANK: 1417822 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	07/31/14 13:06	

LABORATORY CONTROL SAMPLE: 1417823

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Strontium	ug/L	1000	974	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1417824 1417825

Parameter	Units	60174579001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	4190	1000	1000	5250	5340	106	115	75-125	2	20	

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

QC Batch: MPRP/28302 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

METHOD BLANK: 1418873 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	08/04/14 15:48	
Iron, Dissolved	ug/L	ND	50.0	08/04/14 12:16	
Magnesium, Dissolved	ug/L	ND	50.0	08/01/14 12:16	
Potassium, Dissolved	ug/L	ND	500	08/01/14 12:16	
Sodium, Dissolved	ug/L	ND	500	08/01/14 12:16	

LABORATORY CONTROL SAMPLE: 1418874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9100	91	80-120	
Iron, Dissolved	ug/L	10000	10000	100	80-120	
Magnesium, Dissolved	ug/L	10000	9190	92	80-120	
Potassium, Dissolved	ug/L	10000	9990	100	80-120	
Sodium, Dissolved	ug/L	10000	10400	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1418875 1418876

Parameter	Units	60174579001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	206000	10000	10000	215000	218000	92	126	75-125	2	20	M1
Iron, Dissolved	ug/L	ND	10000	10000	9880	9760	99	98	75-125	1	20	
Magnesium, Dissolved	ug/L	133000	10000	10000	149000	150000	157	170	75-125	1	20	M1
Potassium, Dissolved	ug/L	6410	10000	10000	16800	16900	103	104	75-125	1	20	
Sodium, Dissolved	ug/L	181000	10000	10000	191000	195000	98	140	75-125	2	20	M1

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

QC Batch: MSV/63271 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

METHOD BLANK: 1417550 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	07/29/14 12:50	
Ethylbenzene	ug/L	ND	1.0	07/29/14 12:50	
Toluene	ug/L	ND	1.0	07/29/14 12:50	
Xylene (Total)	ug/L	ND	3.0	07/29/14 12:50	
1,2-Dichloroethane-d4 (S)	%	116	80-120	07/29/14 12:50	
4-Bromofluorobenzene (S)	%	99	80-120	07/29/14 12:50	
Toluene-d8 (S)	%	100	80-120	07/29/14 12:50	

LABORATORY CONTROL SAMPLE: 1417551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.2	101	80-120	
Ethylbenzene	ug/L	20	19.9	99	80-121	
Toluene	ug/L	20	18.9	94	80-122	
Xylene (Total)	ug/L	60	55.2	92	80-121	
1,2-Dichloroethane-d4 (S)	%			112	80-120	
4-Bromofluorobenzene (S)	%			98	80-120	
Toluene-d8 (S)	%			99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1417552 1417553

Parameter	Units	60174521001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	ND	20	20	10.8	18.3	54	91	37-157	52	32	R1
Ethylbenzene	ug/L	ND	20	20	10.2	16.9	51	84	31-160	49	32	R1
Toluene	ug/L	ND	20	20	10.4	17.1	52	85	35-157	48	37	R1
Xylene (Total)	ug/L	ND	60	60	29.0	48.1	48	80	34-156	50	37	RS
1,2-Dichloroethane-d4 (S)	%						117	118	80-120			
4-Bromofluorobenzene (S)	%						101	98	80-120			
Toluene-d8 (S)	%						98	98	80-120			
Preservation pH		1.0			1.0	1.0				0		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

QC Batch: WET/49332 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

METHOD BLANK: 1418279 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	07/31/14 08:43	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	07/31/14 08:43	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	07/31/14 08:43	

LABORATORY CONTROL SAMPLE: 1418280

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	487	97	90-110	

SAMPLE DUPLICATE: 1418281

Parameter	Units	60174572002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	255	261	2	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	255	261	2	10	

SAMPLE DUPLICATE: 1418282

Parameter	Units	60174579005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	346	349	1	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	346	349	1	10	

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

QC Batch: WETA/30433 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

METHOD BLANK: 1418019 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/30/14 13:40	

METHOD BLANK: 1419159 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/31/14 12:04	
Sulfate	mg/L	ND	1.0	07/31/14 12:04	

METHOD BLANK: 1419934 Matrix: Water
Associated Lab Samples: 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/01/14 08:57	

LABORATORY CONTROL SAMPLE: 1418020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	103	90-110	

LABORATORY CONTROL SAMPLE: 1419160

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

LABORATORY CONTROL SAMPLE: 1419935

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1418021 1418022

Parameter	Units	60174579001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.2	5.3	105	106	80-120	1	15	
Chloride	mg/L	50.0	25	25	76.9	77.0	108	108	80-120	0	15	
Sulfate	mg/L	1130	500	500	1660	1680	108	110	80-120	1	15	

MATRIX SPIKE SAMPLE: 1418023

Parameter	Units	60174579002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	5.3	95	80-120	
Chloride	mg/L	52.4	25	76.9	98	80-120	
Sulfate	mg/L	1550	1000	2550	100	80-120	

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QUALITY CONTROL DATA

Project: O&G Wellsite GW
Pace Project No.: 60174579

QC Batch: WETA/30419 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

METHOD BLANK: 1417531 Matrix: Water
Associated Lab Samples: 60174579001, 60174579002, 60174579003, 60174579004, 60174579005, 60174579006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	07/29/14 15:08	
Nitrogen, Nitrite	mg/L	ND	0.10	07/29/14 15:08	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	07/29/14 15:08	

LABORATORY CONTROL SAMPLE: 1417532

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.6	99	85-115	
Nitrogen, Nitrite	mg/L	.4	0.38	96	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.0	98	90-110	

MATRIX SPIKE SAMPLE: 1417533

Parameter	Units	60174579001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.84	1.6	2.3	93	85-115	
Nitrogen, Nitrite	mg/L	ND	.4	0.46	116	90-110	M1
Nitrogen, NO2 plus NO3	mg/L	0.84	2	2.8	98	90-110	

SAMPLE DUPLICATE: 1417534

Parameter	Units	60174579002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	1.9	2.0	1	20	
Nitrogen, Nitrite	mg/L	ND	ND		20	
Nitrogen, NO2 plus NO3	mg/L	1.9	2.0	1	20	

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QUALIFIERS

Project: O&G Wellsite GW
Pace Project No.: 60174579

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.
RS	The RPD value in one of the constituent analytes was outside the control limits.
S0	Surrogate recovery outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G Wellsite GW
Pace Project No.: 60174579

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60174579001	**E6W-MW01**	RSK 175	AIR/20926		
60174579002	**E6W-MW03**	RSK 175	AIR/20926		
60174579003	**E6W-MW02**	RSK 175	AIR/20926		
60174579004	**E6T-MW01**	RSK 175	AIR/20926		
60174579005	**E6T-MW02**	RSK 175	AIR/20926		
60174579006	**E6T-MW03**	RSK 175	AIR/20926		
60174579001	**E6W-MW01**	EPA 3010	MPRP/28275	EPA 6010	ICP/21357
60174579002	**E6W-MW03**	EPA 3010	MPRP/28275	EPA 6010	ICP/21357
60174579003	**E6W-MW02**	EPA 3010	MPRP/28275	EPA 6010	ICP/21357
60174579004	**E6T-MW01**	EPA 3010	MPRP/28275	EPA 6010	ICP/21357
60174579005	**E6T-MW02**	EPA 3010	MPRP/28275	EPA 6010	ICP/21357
60174579006	**E6T-MW03**	EPA 3010	MPRP/28275	EPA 6010	ICP/21357
60174579001	**E6W-MW01**	EPA 3010	MPRP/28302	EPA 6010	ICP/21371
60174579002	**E6W-MW03**	EPA 3010	MPRP/28302	EPA 6010	ICP/21371
60174579003	**E6W-MW02**	EPA 3010	MPRP/28302	EPA 6010	ICP/21371
60174579004	**E6T-MW01**	EPA 3010	MPRP/28302	EPA 6010	ICP/21371
60174579005	**E6T-MW02**	EPA 3010	MPRP/28302	EPA 6010	ICP/21371
60174579006	**E6T-MW03**	EPA 3010	MPRP/28302	EPA 6010	ICP/21371
60174579001	**E6W-MW01**	EPA 8260	MSV/63271		
60174579002	**E6W-MW03**	EPA 8260	MSV/63271		
60174579003	**E6W-MW02**	EPA 8260	MSV/63271		
60174579004	**E6T-MW01**	EPA 8260	MSV/63271		
60174579005	**E6T-MW02**	EPA 8260	MSV/63271		
60174579006	**E6T-MW03**	EPA 8260	MSV/63271		
60174579001	**E6W-MW01**	SM 2320B	WET/49332		
60174579002	**E6W-MW03**	SM 2320B	WET/49332		
60174579003	**E6W-MW02**	SM 2320B	WET/49332		
60174579004	**E6T-MW01**	SM 2320B	WET/49332		
60174579005	**E6T-MW02**	SM 2320B	WET/49332		
60174579006	**E6T-MW03**	SM 2320B	WET/49332		
60174579001	**E6W-MW01**	EPA 300.0	WETA/30433		
60174579002	**E6W-MW03**	EPA 300.0	WETA/30433		
60174579003	**E6W-MW02**	EPA 300.0	WETA/30433		
60174579004	**E6T-MW01**	EPA 300.0	WETA/30433		
60174579005	**E6T-MW02**	EPA 300.0	WETA/30433		
60174579006	**E6T-MW03**	EPA 300.0	WETA/30433		
60174579001	**E6W-MW01**	EPA 353.2	WETA/30419		
60174579002	**E6W-MW03**	EPA 353.2	WETA/30419		
60174579003	**E6W-MW02**	EPA 353.2	WETA/30419		
60174579004	**E6T-MW01**	EPA 353.2	WETA/30419		
60174579005	**E6T-MW02**	EPA 353.2	WETA/30419		
60174579006	**E6T-MW03**	EPA 353.2	WETA/30419		

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Sample Condition Upon Receipt

WO# : 60174579

60174579

Client Name: Terracon

Courier: Fed Ex ☐ UPS ☑ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☑ PEX att 7/29

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☑ None ☐ Other ☑ ziplc

Thermometer Used: (T-239) / T-194 Type of Ice: (Wet) Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.2

Temperature should be above freezing to 6°C

Optional
Proj Due Date:
Proj Name:

Date and initials of person examining contents: att 7/29

Chain of Custody present:	☑Yes	☐No	☐N/A	1.
Chain of Custody filled out:	☑Yes	☐No	☐N/A	2.
Chain of Custody relinquished:	☑Yes	☐No	☐N/A	3.
Sampler name & signature on COC:	☑Yes	☐No	☐N/A	4.
Samples arrived within holding time:	☑Yes	☐No	☐N/A	5.
Short Hold Time analyses (<72hr):	☑Yes	☐No	☐N/A	6. NO2/NO3
Rush Turn Around Time requested:	☐Yes	☑No	☐N/A	7.
Sufficient volume:	☑Yes	☐No	☐N/A	8.
Correct containers used:	☑Yes	☐No	☐N/A	
Pace containers used:	☑Yes	☐No	☐N/A	9.
Containers intact:	☑Yes	☐No	☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes	☐No	☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes	☐No	☑N/A	12.
Sample labels match COC:	☑Yes	☐No	☐N/A	
Includes date/time/ID/analyses Matrix: WT				13.
All containers needing preservation have been checked.	☑Yes	☐No	☐N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes	☐No	☐N/A	14.
Exceptions: (VOA) coliform, TOC, O&G, WI-DRO (water), Phenolics	☑Yes	☐No		Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes	☑No	☐N/A	
Pace Trip Blank lot # (if purchased): _____				15.
Headspace in VOA vials (>6mm):	☐Yes	☑No	☐N/A	
				16.
Project sampled in USDA Regulated Area:	☐Yes	☐No	☑N/A	17. List State:

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: dmw Date: 7/29/14

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Terracon	Report To: SAME AS "A"	Attention:
Address: 10625 N. I-70 Frontage Rd.	Copy To:	Company Name:
Wheat Ridge, CO 80033		Address:
Email To: jpansey@terracon.com	Purchase Order No.:	Pace Quote Reference:
Phone: 303-423-3300 Fax: 303-423-3533	Project Name: O&G Wellsite GW	Pace Project Manager: Heather Wilson
Requested Due Date/TAT:	Project Number:	Pace Profile #: 6694, 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260 BTEX	RSK-175 MEE	Nitrate & Nitrite	Alkalinity	Bromide, Chloride, Sulfate	6010-Diss Metals*	6010 Total Strontium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60174579
1	E6W-MW01 (GP3F)	WT	G	7/28/14	1111	7/28/14	1116		9	4		2	3				X	X	X	X	X	X	X		001
2	E6W-MW03	WT	G	7/28/14	1155	7/28/14	1200		9	4		2	3				X	X	X	X	X	X	X		002
3	E6W-MW02	WT	G	7/28/14	1255	7/28/14	1255		9	4		2	3				X	X	X	X	X	X	X		003
4	E6T-MW01	WT	G	7/28/14	1345	7/28/14	1345		9	4		2	3				X	X	X	X	X	X	X		004
5	E6T-MW02	WT	G	7/28/14	1420	7/28/14	1420		9	4		2	3				X	X	X	X	X	X	X		005
6	E6T-MW03	WT	G	7/28/14	1455	7/28/14	1455		9	4		2	3				X	X	X	X	X	X	X		006
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*Ca, Mg, Na, Fe, K	Meredith Stewart /T5	7/28/14	1600	/PACE	7/28/14	1600				
	/PACE	7/28/14	1630	Chris Hamm/PASI	7/29	10:05	1.2	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Meredith Stewart

SIGNATURE of SAMPLER: Meredith Stewart DATE Signed (MM/DD/YY): 7/28/14

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Chain of Custody

RUSH
Pace Analytical
www.pacelabs.com
10275745

Workorder: 60174579 **Workorder Name:** O&G Wellsite GW **Owner Received Date:** 7/29/2014 **Results Requested By:** 8/5/2014

Report To	Subcontract To
Heather Wilson Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665 Fax (913)599-1759	Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

						Preserved Containers						Requested Analysis												
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	none						RSK-175 M/E/E												LAB USE ONLY
1	EGW-MW01	PS	7/28/2014 11:16	60174579001	Water	3						X												10275745001
2	EGW-MW03	PS	7/28/2014 12:00	60174579002	Water	3						X												002
3	EGW-MW02	PS	7/28/2014 12:55	60174579003	Water	3						X												003
4	EGT-MW01	PS	7/28/2014 13:45	60174579004	Water	3						X												004
5	EGT-MW02	PS	7/28/2014 14:20	60174579005	Water	3						X												005
6	EGT-MW03	PS	7/28/2014 14:55	60174579006	Water	3						X												006

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1		7/29/14 1400		7-30-14 9:45	
2					
3					

Cooler Temperature on Receipt 1.5 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace KS

Project #: WO# : 10275745

10275745

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 6113 5277 7694

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☑ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☐ B88A912167504 ☑ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 1.5 **Cooler Temp Corrected (°C):** 1.5 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A

Temp should be above freezing to 6°C **Correction Factor:** 0.0 **Date and Initials of Person Examining Contents:** RH 7-30-14

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☑ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Kala Young **Date:** July 30, 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 06, 2014

Jon Anstey
Terracon
10625 W. I-70 Frontage Rd N
Suite 3
Wheat Ridge, CO 80033

RE: Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on July 30, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia DHHR #:9952C

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60174644001	**DMI-MW01**	Water	07/29/14 11:27	07/30/14 10:00
60174644002	**DMI-MW02**	Water	07/29/14 11:58	07/30/14 10:00
60174644003	**DMI-MW03**	Water	07/29/14 12:25	07/30/14 10:00
60174644004	**MW01-140729**	Water	07/29/14 13:05	07/30/14 10:00
60174644005	**MW03-140729**	Water	07/29/14 13:45	07/30/14 10:00
60174644006	**MW04-140729**	Water	07/29/14 14:15	07/30/14 10:00
60174644007	**MW05-140729**	Water	07/29/14 14:44	07/30/14 10:00
60174644008	**MW06-140729**	Water	07/29/14 15:05	07/30/14 10:00

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60174644001	**DMI-MW01**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	JTS	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174644002	**DMI-MW02**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	JTS	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174644003	**DMI-MW03**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	JTS	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174644004	**MW01-140729**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP, SMW	5	PASI-K
		EPA 8260	JTS	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174644005	**MW03-140729**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP, SMW	5	PASI-K
		EPA 8260	JTS	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174644006	**MW04-140729**	RSK 175	JRB	3	PASI-M
		EPA 8260	JTS	8	PASI-K

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174644007	**MW05-140729**	RSK 175	JRB	3	PASI-M
		EPA 8260	JTS	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174644008	**MW06-140729**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	JGP, SMW	5	PASI-K
		EPA 8260	JTS	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: DMI-MW01 **Lab ID: 60174644001** Collected: 07/29/14 11:27 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 17:59	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 17:59	74-85-1	
Methane	ND	ug/L	6.6	1		07/31/14 17:59	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**853**	ug/L	50.0	5	07/31/14 12:00	08/05/14 16:21	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**52700**	ug/L	100	1	08/01/14 17:10	08/05/14 15:54	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/01/14 17:10	08/05/14 15:54	7439-89-6	
Magnesium, Dissolved	**56900**	ug/L	50.0	1	08/01/14 17:10	08/05/14 15:54	7439-95-4	
Potassium, Dissolved	**1640**	ug/L	500	1	08/01/14 17:10	08/05/14 15:54	7440-09-7	
Sodium, Dissolved	**175000**	ug/L	500	1	08/01/14 17:10	08/05/14 15:54	7440-23-5	M1
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/31/14 11:26	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/31/14 11:26	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 11:26	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 11:26	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	80-120	1		07/31/14 11:26	2037-26-5	
4-Bromofluorobenzene (S)	97	%	80-120	1		07/31/14 11:26	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-120	1		07/31/14 11:26	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 11:26		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**305**	mg/L	20.0	1		08/05/14 10:09		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/05/14 10:09		
Alkalinity, Total as CaCO3	**305**	mg/L	20.0	1		08/05/14 10:09		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**3.0**	mg/L	1.0	1		07/31/14 17:52	24959-67-9	
Chloride	**92.0**	mg/L	10.0	10		08/03/14 10:24	16887-00-6	
Sulfate	**373**	mg/L	50.0	50		08/03/14 10:38	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		07/30/14 16:15		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/30/14 16:15		M1
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		07/30/14 16:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: DMI-MW02 **Lab ID: 60174644002** Collected: 07/29/14 11:58 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		07/31/14 18:10	74-84-0	
Ethene	ND	ug/L	6.2	1		07/31/14 18:10	74-85-1	
Methane	**29.1**	ug/L	6.6	1		07/31/14 18:10	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1590**	ug/L	50.0	5	07/31/14 12:00	08/05/14 16:32	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**114000**	ug/L	100	1	08/01/14 17:10	08/05/14 16:05	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/01/14 17:10	08/05/14 16:05	7439-89-6	
Magnesium, Dissolved	**93200**	ug/L	50.0	1	08/01/14 17:10	08/05/14 16:05	7439-95-4	
Potassium, Dissolved	**6460**	ug/L	500	1	08/01/14 17:10	08/05/14 16:05	7440-09-7	
Sodium, Dissolved	**276000**	ug/L	500	1	08/01/14 17:10	08/05/14 16:05	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/31/14 11:42	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/31/14 11:42	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 11:42	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 11:42	1330-20-7	
Surrogates								
Toluene-d8 (S)	106	%	80-120	1		07/31/14 11:42	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		07/31/14 11:42	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	80-120	1		07/31/14 11:42	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 11:42		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**525**	mg/L	20.0	1		08/05/14 10:19		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/05/14 10:19		
Alkalinity, Total as CaCO3	**525**	mg/L	20.0	1		08/05/14 10:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**4.6**	mg/L	1.0	1		07/31/14 18:06	24959-67-9	
Chloride	**157**	mg/L	20.0	20		08/03/14 10:52	16887-00-6	
Sulfate	**685**	mg/L	100	100		08/03/14 11:07	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**1.4**	mg/L	0.10	1		07/30/14 16:17		
Nitrogen, Nitrite	**0.13**	mg/L	0.10	1		07/30/14 16:17		
Nitrogen, NO2 plus NO3	**1.6**	mg/L	0.10	1		07/30/14 16:17		

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: DMI-MW03 **Lab ID: 60174644003** Collected: 07/29/14 12:25 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/01/14 12:43	74-84-0	
Ethene	ND	ug/L	6.2	1		08/01/14 12:43	74-85-1	
Methane	**11.9**	ug/L	6.6	1		08/01/14 12:43	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1110**	ug/L	50.0	5	07/31/14 12:00	08/05/14 16:34	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**88700**	ug/L	100	1	08/01/14 17:10	08/05/14 16:07	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/01/14 17:10	08/05/14 16:07	7439-89-6	
Magnesium, Dissolved	**51500**	ug/L	50.0	1	08/01/14 17:10	08/05/14 16:07	7439-95-4	
Potassium, Dissolved	**1760**	ug/L	500	1	08/01/14 17:10	08/05/14 16:07	7440-09-7	
Sodium, Dissolved	**145000**	ug/L	500	1	08/01/14 17:10	08/05/14 16:07	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/31/14 11:57	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/31/14 11:57	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 11:57	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 11:57	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	80-120	1		07/31/14 11:57	2037-26-5	
4-Bromofluorobenzene (S)	97	%	80-120	1		07/31/14 11:57	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	80-120	1		07/31/14 11:57	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 11:57		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**275**	mg/L	20.0	1		08/05/14 10:24		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/05/14 10:24		
Alkalinity, Total as CaCO3	**275**	mg/L	20.0	1		08/05/14 10:24		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**2.7**	mg/L	1.0	1		07/31/14 18:21	24959-67-9	
Chloride	**91.1**	mg/L	10.0	10		08/03/14 11:21	16887-00-6	
Sulfate	**423**	mg/L	50.0	50		08/03/14 11:36	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**2.8**	mg/L	0.10	1		07/30/14 16:18		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/30/14 16:18		
Nitrogen, NO2 plus NO3	**2.8**	mg/L	0.10	1		07/30/14 16:18		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: MW01-140729 **Lab ID: 60174644004** Collected: 07/29/14 13:05 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/01/14 13:06	74-84-0	
Ethene	ND	ug/L	6.2	1		08/01/14 13:06	74-85-1	
Methane	**142**	ug/L	6.6	1		08/01/14 13:06	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**8990**	ug/L	50.0	5	07/31/14 12:00	08/05/14 16:36	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**356000**	ug/L	100	1	08/01/14 17:10	08/05/14 16:10	7440-70-2	
Iron, Dissolved	**192**	ug/L	50.0	1	08/01/14 17:10	08/05/14 16:10	7439-89-6	
Magnesium, Dissolved	**986000**	ug/L	1000	20	08/01/14 17:10	08/06/14 14:01	7439-95-4	
Potassium, Dissolved	**16200**	ug/L	10000	20	08/01/14 17:10	08/06/14 14:01	7440-09-7	
Sodium, Dissolved	**2680000**	ug/L	10000	20	08/01/14 17:10	08/06/14 14:01	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/31/14 12:12	71-43-2	
Ethylbenzene	**11.0**	ug/L	1.0	1		07/31/14 12:12	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 12:12	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 12:12	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	80-120	1		07/31/14 12:12	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		07/31/14 12:12	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	80-120	1		07/31/14 12:12	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 12:12		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**829**	mg/L	20.0	1		08/05/14 10:31		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/05/14 10:31		
Alkalinity, Total as CaCO3	**829**	mg/L	20.0	1		08/05/14 10:31		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**3.1**	mg/L	1.0	1		07/31/14 18:36	24959-67-9	
Chloride	**725**	mg/L	100	100		08/03/14 11:50	16887-00-6	
Sulfate	**8930**	mg/L	1000	1000		08/03/14 12:04	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		07/30/14 16:19		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/30/14 16:19		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		07/30/14 16:19		

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: MW03-140729 **Lab ID: 60174644005** Collected: 07/29/14 13:45 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	**23.6**	ug/L	6.2	1		08/01/14 13:17	74-84-0	
Ethene	ND	ug/L	6.2	1		08/01/14 13:17	74-85-1	
Methane	**111**	ug/L	6.6	1		08/01/14 13:17	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**9850**	ug/L	50.0	5	07/31/14 12:00	08/05/14 16:39	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**383000**	ug/L	100	1	08/01/14 17:10	08/05/14 16:12	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/01/14 17:10	08/05/14 16:12	7439-89-6	
Magnesium, Dissolved	**750000**	ug/L	500	10	08/01/14 17:10	08/06/14 14:04	7439-95-4	
Potassium, Dissolved	**8720**	ug/L	5000	10	08/01/14 17:10	08/06/14 14:04	7440-09-7	
Sodium, Dissolved	**1520000**	ug/L	5000	10	08/01/14 17:10	08/06/14 14:04	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	**1.8**	ug/L	1.0	1		07/31/14 12:28	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/31/14 12:28	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 12:28	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 12:28	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	80-120	1		07/31/14 12:28	2037-26-5	
4-Bromofluorobenzene (S)	94	%	80-120	1		07/31/14 12:28	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-120	1		07/31/14 12:28	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 12:28		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**1410**	mg/L	40.0	2		08/05/14 10:51		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	40.0	2		08/05/14 10:51		
Alkalinity, Total as CaCO3	**1410**	mg/L	40.0	2		08/05/14 10:51		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.8**	mg/L	1.0	1		07/31/14 18:50	24959-67-9	
Chloride	**176**	mg/L	20.0	20		08/03/14 12:48	16887-00-6	
Sulfate	**6480**	mg/L	1000	1000		08/03/14 13:02	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		07/30/14 16:21		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/30/14 16:21		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		07/30/14 16:21		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: MW04-140729 **Lab ID: 60174644006** Collected: 07/29/14 14:15 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/01/14 13:28	74-84-0	
Ethene	ND	ug/L	6.2	1		08/01/14 13:28	74-85-1	
Methane	ND	ug/L	6.6	1		08/01/14 13:28	74-82-8	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/31/14 12:43	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/31/14 12:43	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 12:43	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 12:43	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	80-120	1		07/31/14 12:43	2037-26-5	
4-Bromofluorobenzene (S)	101	%	80-120	1		07/31/14 12:43	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	80-120	1		07/31/14 12:43	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 12:43		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**480**	mg/L	20.0	1		08/05/14 10:56		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/05/14 10:56		
Alkalinity, Total as CaCO3	**480**	mg/L	20.0	1		08/05/14 10:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**2.4**	mg/L	1.0	1		07/31/14 19:05	24959-67-9	
Chloride	**105**	mg/L	10.0	10		08/03/14 13:17	16887-00-6	
Sulfate	**6960**	mg/L	1000	1000		08/03/14 13:31	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.75**	mg/L	0.10	1		07/30/14 16:21		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/30/14 16:21		
Nitrogen, NO2 plus NO3	**0.75**	mg/L	0.10	1		07/30/14 16:21		

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: MW05-140729 **Lab ID: 60174644007** Collected: 07/29/14 14:44 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/01/14 13:39	74-84-0	
Ethene	ND	ug/L	6.2	1		08/01/14 13:39	74-85-1	
Methane	ND	ug/L	6.6	1		08/01/14 13:39	74-82-8	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/31/14 12:58	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/31/14 12:58	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 12:58	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 12:58	1330-20-7	
Surrogates								
Toluene-d8 (S)	106	%	80-120	1		07/31/14 12:58	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		07/31/14 12:58	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-120	1		07/31/14 12:58	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 12:58		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**434**	mg/L	20.0	1		08/05/14 11:10		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/05/14 11:10		
Alkalinity, Total as CaCO3	**434**	mg/L	20.0	1		08/05/14 11:10		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.4**	mg/L	1.0	1		07/31/14 19:20	24959-67-9	
Chloride	**59.4**	mg/L	5.0	5		08/03/14 13:45	16887-00-6	
Sulfate	**5740**	mg/L	500	500		08/03/14 14:00	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.23**	mg/L	0.10	1		07/30/14 16:22		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/30/14 16:22		
Nitrogen, NO2 plus NO3	**0.23**	mg/L	0.10	1		07/30/14 16:22		

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Sample: MW06-140729 **Lab ID: 60174644008** Collected: 07/29/14 15:05 Received: 07/30/14 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/01/14 13:51	74-84-0	
Ethene	ND	ug/L	6.2	1		08/01/14 13:51	74-85-1	
Methane	ND	ug/L	6.6	1		08/01/14 13:51	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**7130**	ug/L	50.0	5	07/31/14 12:00	08/05/14 16:41	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**386000**	ug/L	100	1	08/01/14 17:10	08/05/14 16:15	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/01/14 17:10	08/05/14 16:15	7439-89-6	
Magnesium, Dissolved	**554000**	ug/L	500	10	08/01/14 17:10	08/06/14 14:08	7439-95-4	
Potassium, Dissolved	**9160**	ug/L	5000	10	08/01/14 17:10	08/06/14 14:08	7440-09-7	
Sodium, Dissolved	**1010000**	ug/L	5000	10	08/01/14 17:10	08/06/14 14:08	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		07/31/14 13:14	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		07/31/14 13:14	100-41-4	
Toluene	ND	ug/L	1.0	1		07/31/14 13:14	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		07/31/14 13:14	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	80-120	1		07/31/14 13:14	2037-26-5	
4-Bromofluorobenzene (S)	95	%	80-120	1		07/31/14 13:14	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-120	1		07/31/14 13:14	17060-07-0	
Preservation pH	**1.0**		0.10	1		07/31/14 13:14		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**465**	mg/L	20.0	1		08/05/14 11:16		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/05/14 11:16		
Alkalinity, Total as CaCO3	**465**	mg/L	20.0	1		08/05/14 11:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.5**	mg/L	1.0	1		07/31/14 19:34	24959-67-9	
Chloride	**66.7**	mg/L	5.0	5		08/03/14 14:14	16887-00-6	
Sulfate	**5540**	mg/L	500	500		08/03/14 14:29	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		07/30/14 16:25		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/30/14 16:25		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		07/30/14 16:25		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: AIR/20926
QC Batch Method: RSK 175
Analysis Method: RSK 175
Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60174644001, 60174644002

METHOD BLANK: 1748515 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	07/31/14 12:07	
Ethene	ug/L	ND	6.2	07/31/14 12:07	
Methane	ug/L	ND	6.6	07/31/14 12:07	

LABORATORY CONTROL SAMPLE & LCSD: 1748516 1748517

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	109	113	96	99	85-115	4	20	
Ethene	ug/L	106	102	105	96	99	85-115	3	20	
Methane	ug/L	60.7	58.5	60.5	96	100	85-115	3	20	

SAMPLE DUPLICATE: 1748518

Parameter	Units	92210975012 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	ND		20	

SAMPLE DUPLICATE: 1748519

Parameter	Units	60174579004 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	5.6J		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: AIR/20940 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

METHOD BLANK: 1749793 Matrix: Water
Associated Lab Samples: 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	08/01/14 12:21	
Ethene	ug/L	ND	6.2	08/01/14 12:21	
Methane	ug/L	ND	6.6	08/01/14 12:21	

LABORATORY CONTROL SAMPLE & LCSD: 1749794 1749795

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	110	112	97	99	85-115	2	20	
Ethene	ug/L	106	103	105	97	99	85-115	2	20	
Methane	ug/L	60.7	59.0	60.2	97	99	85-115	2	20	

SAMPLE DUPLICATE: 1749796

Parameter	Units	60174644003 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	11.9	13.5	13	20	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: MPRP/28300 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644008

METHOD BLANK: 1418535 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	08/05/14 16:19	

LABORATORY CONTROL SAMPLE: 1418536

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Strontium	ug/L	1000	949	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1418537 1418538

Parameter	Units	60174644001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	853	1000	1000	1830	1860	97	101	75-125	2	20	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: MPRP/28325 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644008

METHOD BLANK: 1419624 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	08/05/14 15:52	
Iron, Dissolved	ug/L	ND	50.0	08/05/14 15:52	
Magnesium, Dissolved	ug/L	ND	50.0	08/05/14 15:52	
Potassium, Dissolved	ug/L	ND	500	08/05/14 15:52	
Sodium, Dissolved	ug/L	ND	500	08/05/14 15:52	

LABORATORY CONTROL SAMPLE: 1419625

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9170	92	80-120	
Iron, Dissolved	ug/L	10000	9480	95	80-120	
Magnesium, Dissolved	ug/L	10000	9380	94	80-120	
Potassium, Dissolved	ug/L	10000	8900	89	80-120	
Sodium, Dissolved	ug/L	10000	9120	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1419626 1419627

Parameter	Units	60174644001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	52700	10000	10000	60900	60300	81	76	75-125	1	20	
Iron, Dissolved	ug/L	ND	10000	10000	9770	9580	98	96	75-125	2	20	
Magnesium, Dissolved	ug/L	56900	10000	10000	64500	65100	77	82	75-125	1	20	
Potassium, Dissolved	ug/L	1640	10000	10000	11200	11100	95	95	75-125	0	20	
Sodium, Dissolved	ug/L	175000	10000	10000	179000	182000	35	62	75-125	1	20	M1

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: MSV/63302 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

METHOD BLANK: 1418471 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	07/31/14 09:54	
Ethylbenzene	ug/L	ND	1.0	07/31/14 09:54	
Toluene	ug/L	ND	1.0	07/31/14 09:54	
Xylene (Total)	ug/L	ND	3.0	07/31/14 09:54	
1,2-Dichloroethane-d4 (S)	%	99	80-120	07/31/14 09:54	
4-Bromofluorobenzene (S)	%	97	80-120	07/31/14 09:54	
Toluene-d8 (S)	%	99	80-120	07/31/14 09:54	

LABORATORY CONTROL SAMPLE: 1418472

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	19.5	98	80-120	
Ethylbenzene	ug/L	20	20.3	102	80-121	
Toluene	ug/L	20	20.6	103	80-122	
Xylene (Total)	ug/L	60	63.1	105	80-121	
1,2-Dichloroethane-d4 (S)	%			96	80-120	
4-Bromofluorobenzene (S)	%			103	80-120	
Toluene-d8 (S)	%			101	80-120	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: WET/49353 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

METHOD BLANK: 1419052 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	08/05/14 09:51	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	08/05/14 09:51	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	08/05/14 09:51	

LABORATORY CONTROL SAMPLE: 1419053

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	473	95	90-110	

SAMPLE DUPLICATE: 1419054

Parameter	Units	60174644001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	305	309	1	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	305	309	1	10	

SAMPLE DUPLICATE: 1419055

Parameter	Units	60174644008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	465	470	1	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	465	470	1	10	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: WETA/30454 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

METHOD BLANK: 1418577 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	07/31/14 13:13	

METHOD BLANK: 1420376 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/03/14 08:57	
Sulfate	mg/L	ND	1.0	08/03/14 08:57	

LABORATORY CONTROL SAMPLE: 1418578

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	4.9	99	90-110	

LABORATORY CONTROL SAMPLE: 1420377

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1418579 1418580

Parameter	Units	60174729001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	500	500	518	519	104	104	80-120	0	15	
Chloride	mg/L	1130	500	500	1640	1680	104	110	80-120	2	15	
Sulfate	mg/L	151	500	500	621	624	94	95	80-120	1	15	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

MATRIX SPIKE SAMPLE: 1418581

Parameter	Units	50101385003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	5	4.3	86	80-120	
Chloride	mg/L	20.9	10	32.0	111	80-120	
Sulfate	mg/L	ND	5	5.3	107	80-120	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

QC Batch: WETA/30439 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

METHOD BLANK: 1418128 Matrix: Water
Associated Lab Samples: 60174644001, 60174644002, 60174644003, 60174644004, 60174644005, 60174644006, 60174644007, 60174644008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	07/30/14 16:12	
Nitrogen, Nitrite	mg/L	ND	0.10	07/30/14 16:12	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	07/30/14 16:12	

LABORATORY CONTROL SAMPLE: 1418129

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.4	88	85-115	
Nitrogen, Nitrite	mg/L	.4	0.39	97	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	1.8	90	90-110	

MATRIX SPIKE SAMPLE: 1418130

Parameter	Units	60174644001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	ND	1.6	1.5	91	85-115	
Nitrogen, Nitrite	mg/L	ND	.4	0.46	116	90-110	M1
Nitrogen, NO2 plus NO3	mg/L	ND	2	2.0	96	90-110	

MATRIX SPIKE SAMPLE: 1418131

Parameter	Units	60174644004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	ND	1.6	1.5	92	85-115	
Nitrogen, Nitrite	mg/L	ND	.4	0.43	107	90-110	
Nitrogen, NO2 plus NO3	mg/L	ND	2	1.9	95	90-110	

SAMPLE DUPLICATE: 1418132

Parameter	Units	60174645002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	0.59	0.60	2	20	
Nitrogen, Nitrite	mg/L	ND	ND		20	
Nitrogen, NO2 plus NO3	mg/L	0.62	0.62	0	20	

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QUALIFIERS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-M	Pace Analytical Services - Minneapolis

BATCH QUALIFIERS

Batch: MSV/63302

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60174644001	**DMI-MW01**	RSK 175	AIR/20926		
60174644002	**DMI-MW02**	RSK 175	AIR/20926		
60174644003	**DMI-MW03**	RSK 175	AIR/20940		
60174644004	**MW01-140729**	RSK 175	AIR/20940		
60174644005	**MW03-140729**	RSK 175	AIR/20940		
60174644006	**MW04-140729**	RSK 175	AIR/20940		
60174644007	**MW05-140729**	RSK 175	AIR/20940		
60174644008	**MW06-140729**	RSK 175	AIR/20940		
60174644001	**DMI-MW01**	EPA 3010	MPRP/28300	EPA 6010	ICP/21366
60174644002	**DMI-MW02**	EPA 3010	MPRP/28300	EPA 6010	ICP/21366
60174644003	**DMI-MW03**	EPA 3010	MPRP/28300	EPA 6010	ICP/21366
60174644004	**MW01-140729**	EPA 3010	MPRP/28300	EPA 6010	ICP/21366
60174644005	**MW03-140729**	EPA 3010	MPRP/28300	EPA 6010	ICP/21366
60174644008	**MW06-140729**	EPA 3010	MPRP/28300	EPA 6010	ICP/21366
60174644001	**DMI-MW01**	EPA 3010	MPRP/28325	EPA 6010	ICP/21383
60174644002	**DMI-MW02**	EPA 3010	MPRP/28325	EPA 6010	ICP/21383
60174644003	**DMI-MW03**	EPA 3010	MPRP/28325	EPA 6010	ICP/21383
60174644004	**MW01-140729**	EPA 3010	MPRP/28325	EPA 6010	ICP/21383
60174644005	**MW03-140729**	EPA 3010	MPRP/28325	EPA 6010	ICP/21383
60174644008	**MW06-140729**	EPA 3010	MPRP/28325	EPA 6010	ICP/21383
60174644001	**DMI-MW01**	EPA 8260	MSV/63302		
60174644002	**DMI-MW02**	EPA 8260	MSV/63302		
60174644003	**DMI-MW03**	EPA 8260	MSV/63302		
60174644004	**MW01-140729**	EPA 8260	MSV/63302		
60174644005	**MW03-140729**	EPA 8260	MSV/63302		
60174644006	**MW04-140729**	EPA 8260	MSV/63302		
60174644007	**MW05-140729**	EPA 8260	MSV/63302		
60174644008	**MW06-140729**	EPA 8260	MSV/63302		
60174644001	**DMI-MW01**	SM 2320B	WET/49353		
60174644002	**DMI-MW02**	SM 2320B	WET/49353		
60174644003	**DMI-MW03**	SM 2320B	WET/49353		
60174644004	**MW01-140729**	SM 2320B	WET/49353		
60174644005	**MW03-140729**	SM 2320B	WET/49353		
60174644006	**MW04-140729**	SM 2320B	WET/49353		
60174644007	**MW05-140729**	SM 2320B	WET/49353		
60174644008	**MW06-140729**	SM 2320B	WET/49353		
60174644001	**DMI-MW01**	EPA 300.0	WETA/30454		
60174644002	**DMI-MW02**	EPA 300.0	WETA/30454		
60174644003	**DMI-MW03**	EPA 300.0	WETA/30454		
60174644004	**MW01-140729**	EPA 300.0	WETA/30454		
60174644005	**MW03-140729**	EPA 300.0	WETA/30454		
60174644006	**MW04-140729**	EPA 300.0	WETA/30454		
60174644007	**MW05-140729**	EPA 300.0	WETA/30454		
60174644008	**MW06-140729**	EPA 300.0	WETA/30454		
60174644001	**DMI-MW01**	EPA 353.2	WETA/30439		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174644

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60174644002	**DMI-MW02**	EPA 353.2	WETA/30439		
60174644003	**DMI-MW03**	EPA 353.2	WETA/30439		
60174644004	**MW01-140729**	EPA 353.2	WETA/30439		
60174644005	**MW03-140729**	EPA 353.2	WETA/30439		
60174644006	**MW04-140729**	EPA 353.2	WETA/30439		
60174644007	**MW05-140729**	EPA 353.2	WETA/30439		
60174644008	**MW06-140729**	EPA 353.2	WETA/30439		

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Sample Condition Upon Receipt

WO# : 60174644

60174644

Client Name: Tetra Tech

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☑ PEX

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☑ None ☐ Other ☑ ZPLC

Thermometer Used: T-239 / T-194 **Type of Ice:** (Wet) Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 3.8

Temperature should be above freezing to 6°C

Date and initials of person examining contents: ATH 7/30

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	6. NO2/NO3
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	Sample MW05-140729 not received
Includes date/time/ID/analyses Matrix: WT		13.
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	BP3N MW01-140729 initial pH 7.0 added 2.5mL HNO3 final pH 1.5 " " " " " " " " " " " "
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☑No ☐N/A	" MW02 " " initial pH 3.0 added " " " "
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☑Yes ☐No	14. " MW03 " " initial pH 4.0 added 2.5mL HNO3 final pH 2.0
		Initial when completed ATH / Lot # of added preservative IRS13-2-3-2
Trip Blank present:	☐Yes ☑No ☐N/A	
Pace Trip Blank lot # (if purchased): _____		15.
Headspace in VOA vials (>6mm):	☐Yes ☑No ☐N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☑N/A	17. List State:

Client Notification/ Resolution: Copy COC to Client? Y / N dmw 7/30/14 Field Data Required? Y / N

Person Contacted: Jon Anstey Date/Time: 7/30/14

Comments/ Resolution: Notified of missing sample - he is checking on it dmw 7/30/14
MW-05 was mislabeled as MW-04. Were able to identify which was which by collection date time except for the metals containers. dmw 7/30/14

Project Manager Review: dmw Date: 7/30/14

Analyze dissolved from unpreserved as have not been field filtering. dmw 7/30/14

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Page: 1 of 1

Section A
Required Client Information:

Company:	Terracon
Address:	10625 N. I-70 Frontage Rd.
	Wheat Ridge, CO 80033
Email To:	jpanstey@terracon.com
Phone:	303-423-3300 Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Same as Section "A"
Copy To:	
Purchase Order No.:	
Project Name:	O&G Wellsite GW
Project Number:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson
Pace Profile #:	6694, 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER ______

Site Location STATE: CO

Requested Analysis Filtered (Y/N)

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	TIME	COMPOSITE END/GRAB DATE	TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	8260 BTEX	RSK-175 MEE	Nitrate & Nitrite	Alkalinity	Bromide, Chloride, Sulfate	6010-Diss Metals*	6010 Total Strontium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DMI-MW01	WT	G	7/29/14	1127	7/29/14	1127		9	4		2	3						X	X	X	X	X	X	X		1(BP2U) 3(DG9H) 3(VG9U) [illegible] 01
2	DMI-MW02	WT	G	7/29/14	1158	7/29/14	1158		9	4		2	3						X	X	X	X	X	X	X		02
3	DMI-MW03	WT	G	7/29/14	1225	7/29/14	1225		9	4		2	3						X	X	X	X	X	X	X		03
4	MW01-140729	WT	G	7/29/14	1305	7/29/14	1305		9	4		2	3						X	X	X	X	X	X	X		04
5	MW03-140729	WT	G	7/29/14	1345	7/29/14	1345		9	4		2	3						X	X	X	X	X	X	X		
6	MW04-140729	WT	G	7/29/14	1415	7/29/14	1415		9	4		2	3						X	X	X	X	X	X	X		2(BP2U) 6(DG9H) 6(VG9U) [illegible] 06
7	MW05-140729	WT	G	7/29/14	1444	7/29/14	1444		9	4		2	3						X	X	X	X	X	X	X		07
8	MW06-140729	WT	G	7/29/14	1505	7/29/14	1505		7	4		2	3						X	X	X	X	X	X	X		1(BP2U) 3(DG9H) 3(VG9U) [illegible] 08
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*Ca, Mg, Na, Fe, K	Meredith Stewart	7/29/14	1645	[illegible] / PACE	7/29/14	1645				
	[illegible] / PACE	7/29/14	1650	[illegible] /PASI	7/30	10:00	3.8	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Meredith Stewart

SIGNATURE of SAMPLER: Meredith Stewart DATE Signed (MM/DD/YY): 07/29/14

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Chain of Custody

10275896

Pace Analytical®
www.pacelabs.com

Workorder: 60174644 **Workorder Name:** O&G WELLSITE GW **Owner Received Date:** 7/30/2014 **Results Requested By:** 8/8/2014

Report To	Subcontract To
Heather Wilson Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665 Fax (913)599-1759	Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: none	Requested Analysis: RSK-175 M/E/E	LAB USE ONLY
1	DMI-MW01	PS	7/29/2014 11:27	60174644001	Water	3	X	-001
2	DMI-MW02	PS	7/29/2014 11:58	60174644002	Water	3	X	-002
3	DMI-MW03	PS	7/29/2014 12:25	60174644003	Water	3	X	-003
4	MW01-140729	PS	7/29/2014 13:05	60174644004	Water	3	X	-004
5	MW03-140729	PS	7/29/2014 13:45	60174644005	Water	3	X	-005
6	MW04-140729	PS	7/29/2014 14:15	60174644006	Water	3	X	-006
7	MW05-140729	PS	7/29/2014 14:44	60174644007	Water	3	X	-007
8	MW06-140729	PS	7/29/2014 15:05	60174644008	Water	3	X	-008

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	7/30/14 1400	[signature] Pace	7/30/14 9:45
2				
3				

Comments

Cooler Temperature on Receipt 3.6 °C **Custody Seal** (Y) or N **Received on Ice** (Y) or N **Samples Intact** (Y) or N

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace KS

Project #: WO# : 10275896

10275896

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

Tracking Number: 6113 5277 8484

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☑ Yes ☐ No

Thermom. Used: ☐ B88A9130516413 ☐ B88A912167504 ☑ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.6 **Cooler Temp Corrected (°C):** 3.6 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A
Temp should be above freezing to 6°C **Correction Factor:** 0.0 **Date and Initials of Person Examining Contents:** RH 7-31-14

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Kathryn Kluge **Date:** July 31, 2014

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 07, 2014

Jon Anstey
Terracon
10625 W. I-70 Frontage Rd N
Suite 3
Wheat Ridge, CO 80033

RE: Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on July 31, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alabama Certification #40770
Alabama Certification #40770
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: 8TMS-L
Florida/NELAP Certification #: E87605
Guam Certification #: Pace
Georgia Certification #: 959
Idaho Certification #: MN00064
Hawaii Certification #MN00064
Illinois Certification #: 200011
Indiana Certification#C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky Dept of Envi. Protection - DW #90062
Kentucky Dept of Envi. Protection - WW #:90062
Louisiana DEQ Certification #: 3086
Louisiana DHH #: LA140001
Maine Certification #: 2013011
Maryland Certification #: 322
Michigan DEPH Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT0092
Nebraska Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Carolina State Public Health #: 27700
North Dakota Certification #: R-036
Ohio EPA #: 4150
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Saipan (CNMI) #:MP0003
South Carolina #:74003001
Texas Certification #: T104704192
Tennessee Certification #: 02818
Utah Certification #: MN000642013-4
Virginia DGS Certification #: 251
Virginia/VELAP Certification #: Pace
Washington Certification #: C486
Wisconsin Certification #: 999407970
West Virginia Certification #: 382
West Virginia DHHR #:9952C

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60174747001	**RD1-MW01-140730**	Water	07/30/14 11:43	07/31/14 10:10
60174747002	**RD1-MW02-140730**	Water	07/30/14 12:13	07/31/14 10:10
60174747003	**RD1-MW03R-140730**	Water	07/30/14 13:22	07/31/14 10:10
60174747004	**RD1-MW04-140730**	Water	07/30/14 12:38	07/31/14 10:10
60174747005	**RD1-MW05-140730**	Water	07/30/14 12:57	07/31/14 10:10
60174747006	**RD1-MW06-140730**	Water	07/30/14 14:20	07/31/14 10:10
60174747007	**MW05-140730**	Water	07/30/14 14:45	07/31/14 10:10

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60174747001	**RD1-MW01-140730**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	RAB	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174747002	**RD1-MW02-140730**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	RAB	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174747003	**RD1-MW03R-140730**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	RAB	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174747004	**RD1-MW04-140730**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	RAB	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174747005	**RD1-MW05-140730**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K
		EPA 8260	RAB	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174747006	**RD1-MW06-140730**	RSK 175	JRB	3	PASI-M
		EPA 6010	SMW	1	PASI-K

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010	SMW	5	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	CRT	3	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	AJM	3	PASI-K
60174747007	**MW05-140730**	EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Sample: RD1-MW01-140730 **Lab ID: 60174747001** Collected: 07/30/14 11:43 Received: 07/31/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/04/14 18:38	74-84-0	
Ethene	ND	ug/L	6.2	1		08/04/14 18:38	74-85-1	
Methane	ND	ug/L	6.6	1		08/04/14 18:38	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3180**	ug/L	50.0	5	08/01/14 17:10	08/06/14 15:23	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**86900**	ug/L	100	1	08/04/14 11:50	08/06/14 14:54	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/04/14 11:50	08/06/14 14:54	7439-89-6	
Magnesium, Dissolved	**74800**	ug/L	50.0	1	08/04/14 11:50	08/06/14 14:54	7439-95-4	
Potassium, Dissolved	**2780**	ug/L	500	1	08/04/14 11:50	08/06/14 14:54	7440-09-7	
Sodium, Dissolved	**127000**	ug/L	500	1	08/04/14 11:50	08/06/14 14:54	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/01/14 19:48	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		08/01/14 19:48	100-41-4	
Toluene	ND	ug/L	1.0	1		08/01/14 19:48	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		08/01/14 19:48	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	80-120	1		08/01/14 19:48	2037-26-5	
4-Bromofluorobenzene (S)	85	%	80-120	1		08/01/14 19:48	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	80-120	1		08/01/14 19:48	17060-07-0	
Preservation pH	**1.0**		0.10	1		08/01/14 19:48		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**407**	mg/L	20.0	1		08/06/14 16:25		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/06/14 16:25		
Alkalinity, Total as CaCO3	**407**	mg/L	20.0	1		08/06/14 16:25		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		08/03/14 15:41	24959-67-9	
Chloride	**34.5**	mg/L	5.0	5		08/07/14 09:26	16887-00-6	
Sulfate	**323**	mg/L	50.0	50		08/07/14 10:09	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**4.8**	mg/L	0.10	1		07/31/14 13:43		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/31/14 13:43		
Nitrogen, NO2 plus NO3	**4.8**	mg/L	0.10	1		07/31/14 13:43		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Sample: RD1-MW02-140730 **Lab ID: 60174747002** Collected: 07/30/14 12:13 Received: 07/31/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/04/14 18:49	74-84-0	
Ethene	ND	ug/L	6.2	1		08/04/14 18:49	74-85-1	
Methane	**9.4**	ug/L	6.6	1		08/04/14 18:49	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3060**	ug/L	50.0	5	08/01/14 17:10	08/06/14 15:30	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**88000**	ug/L	100	1	08/04/14 11:50	08/06/14 15:01	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:01	7439-89-6	
Magnesium, Dissolved	**80800**	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:01	7439-95-4	
Potassium, Dissolved	**1890**	ug/L	500	1	08/04/14 11:50	08/06/14 15:01	7440-09-7	
Sodium, Dissolved	**104000**	ug/L	500	1	08/04/14 11:50	08/06/14 15:01	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/01/14 20:04	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		08/01/14 20:04	100-41-4	
Toluene	ND	ug/L	1.0	1		08/01/14 20:04	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		08/01/14 20:04	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%	80-120	1		08/01/14 20:04	2037-26-5	
4-Bromofluorobenzene (S)	85	%	80-120	1		08/01/14 20:04	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	80-120	1		08/01/14 20:04	17060-07-0	
Preservation pH	**1.0**		0.10	1		08/01/14 20:04		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**471**	mg/L	20.0	1		08/06/14 16:41		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/06/14 16:41		
Alkalinity, Total as CaCO3	**471**	mg/L	20.0	1		08/06/14 16:41		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		08/03/14 16:24	24959-67-9	
Chloride	**31.8**	mg/L	5.0	5		08/06/14 11:21	16887-00-6	
Sulfate	**305**	mg/L	50.0	50		08/06/14 11:36	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**3.8**	mg/L	0.10	1		07/31/14 13:44		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/31/14 13:44		
Nitrogen, NO2 plus NO3	**3.8**	mg/L	0.10	1		07/31/14 13:44		

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Sample: RD1-MW03R-140730 **Lab ID: 60174747003** Collected: 07/30/14 13:22 Received: 07/31/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/04/14 19:00	74-84-0	
Ethene	ND	ug/L	6.2	1		08/04/14 19:00	74-85-1	
Methane	**34.7**	ug/L	6.6	1		08/04/14 19:00	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3530**	ug/L	50.0	5	08/01/14 17:10	08/06/14 15:32	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**84800**	ug/L	100	1	08/04/14 11:50	08/06/14 15:03	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:03	7439-89-6	
Magnesium, Dissolved	**78200**	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:03	7439-95-4	
Potassium, Dissolved	**2120**	ug/L	500	1	08/04/14 11:50	08/06/14 15:03	7440-09-7	
Sodium, Dissolved	**100000**	ug/L	500	1	08/04/14 11:50	08/06/14 15:03	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/01/14 20:19	71-43-2	
Ethylbenzene	**2.5**	ug/L	1.0	1		08/01/14 20:19	100-41-4	
Toluene	ND	ug/L	1.0	1		08/01/14 20:19	108-88-3	
Xylene (Total)	**13.3**	ug/L	3.0	1		08/01/14 20:19	1330-20-7	
Surrogates								
Toluene-d8 (S)	102	%	80-120	1		08/01/14 20:19	2037-26-5	
4-Bromofluorobenzene (S)	90	%	80-120	1		08/01/14 20:19	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-120	1		08/01/14 20:19	17060-07-0	
Preservation pH	**1.0**		0.10	1		08/01/14 20:19		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**555**	mg/L	20.0	1		08/06/14 16:47		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/06/14 16:47		
Alkalinity, Total as CaCO3	**555**	mg/L	20.0	1		08/06/14 16:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		08/03/14 16:38	24959-67-9	
Chloride	**31.5**	mg/L	5.0	5		08/06/14 11:50	16887-00-6	
Sulfate	**290**	mg/L	50.0	50		08/06/14 12:04	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**3.8**	mg/L	0.10	1		07/31/14 13:45		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/31/14 13:45		
Nitrogen, NO2 plus NO3	**3.8**	mg/L	0.10	1		07/31/14 13:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Sample: RD1-MW04-140730 **Lab ID: 60174747004** Collected: 07/30/14 12:38 Received: 07/31/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/04/14 19:12	74-84-0	
Ethene	ND	ug/L	6.2	1		08/04/14 19:12	74-85-1	
Methane	**31.6**	ug/L	6.6	1		08/04/14 19:12	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3370**	ug/L	50.0	5	08/01/14 17:10	08/06/14 15:35	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**92400**	ug/L	100	1	08/04/14 11:50	08/06/14 15:05	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:05	7439-89-6	
Magnesium, Dissolved	**81400**	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:05	7439-95-4	
Potassium, Dissolved	**2330**	ug/L	500	1	08/04/14 11:50	08/06/14 15:05	7440-09-7	
Sodium, Dissolved	**114000**	ug/L	500	1	08/04/14 11:50	08/06/14 15:05	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	10.0	10		08/01/14 20:34	71-43-2	
Ethylbenzene	**77.8**	ug/L	10.0	10		08/01/14 20:34	100-41-4	
Toluene	ND	ug/L	10.0	10		08/01/14 20:34	108-88-3	
Xylene (Total)	**1140**	ug/L	30.0	10		08/01/14 20:34	1330-20-7	
Surrogates								
Toluene-d8 (S)	106	%	80-120	10		08/01/14 20:34	2037-26-5	
4-Bromofluorobenzene (S)	93	%	80-120	10		08/01/14 20:34	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	80-120	10		08/01/14 20:34	17060-07-0	
Preservation pH	**1.0**		0.10	10		08/01/14 20:34		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**552**	mg/L	20.0	1		08/06/14 16:54		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/06/14 16:54		
Alkalinity, Total as CaCO3	**552**	mg/L	20.0	1		08/06/14 16:54		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		08/03/14 16:53	24959-67-9	
Chloride	**33.7**	mg/L	5.0	5		08/06/14 12:19	16887-00-6	
Sulfate	**320**	mg/L	50.0	50		08/06/14 12:33	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**4.2**	mg/L	0.10	1		07/31/14 13:45		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/31/14 13:45		
Nitrogen, NO2 plus NO3	**4.2**	mg/L	0.10	1		07/31/14 13:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Sample: RD1-MW05-140730 **Lab ID: 60174747005** Collected: 07/30/14 12:57 Received: 07/31/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/04/14 19:23	74-84-0	
Ethene	ND	ug/L	6.2	1		08/04/14 19:23	74-85-1	
Methane	**406**	ug/L	6.6	1		08/04/14 19:23	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3080**	ug/L	50.0	5	08/01/14 17:10	08/06/14 15:37	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**82100**	ug/L	100	1	08/04/14 11:50	08/06/14 15:07	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:07	7439-89-6	
Magnesium, Dissolved	**76200**	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:07	7439-95-4	
Potassium, Dissolved	**2470**	ug/L	500	1	08/04/14 11:50	08/06/14 15:07	7440-09-7	
Sodium, Dissolved	**102000**	ug/L	500	1	08/04/14 11:50	08/06/14 15:07	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/01/14 20:50	71-43-2	
Ethylbenzene	**8.8**	ug/L	1.0	1		08/01/14 20:50	100-41-4	
Toluene	ND	ug/L	1.0	1		08/01/14 20:50	108-88-3	
Xylene (Total)	**59.4**	ug/L	3.0	1		08/01/14 20:50	1330-20-7	
Surrogates								
Toluene-d8 (S)	96	%	80-120	1		08/01/14 20:50	2037-26-5	
4-Bromofluorobenzene (S)	93	%	80-120	1		08/01/14 20:50	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	80-120	1		08/01/14 20:50	17060-07-0	
Preservation pH	**1.0**		0.10	1		08/01/14 20:50		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**584**	mg/L	20.0	1		08/06/14 17:02		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/06/14 17:02		
Alkalinity, Total as CaCO3	**584**	mg/L	20.0	1		08/06/14 17:02		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		08/03/14 17:07	24959-67-9	
Chloride	**31.8**	mg/L	5.0	5		08/06/14 12:48	16887-00-6	
Sulfate	**291**	mg/L	50.0	50		08/06/14 13:02	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**3.7**	mg/L	0.10	1		07/31/14 13:49		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/31/14 13:49		
Nitrogen, NO2 plus NO3	**3.7**	mg/L	0.10	1		07/31/14 13:49		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Sample: RD1-MW06-140730 **Lab ID: 60174747006** Collected: 07/30/14 14:20 Received: 07/31/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	ND	ug/L	6.2	1		08/04/14 19:34	74-84-0	
Ethene	ND	ug/L	6.2	1		08/04/14 19:34	74-85-1	
Methane	ND	ug/L	6.6	1		08/04/14 19:34	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3600**	ug/L	50.0	5	08/01/14 17:10	08/06/14 15:44	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**82700**	ug/L	100	1	08/04/14 11:50	08/06/14 15:10	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:10	7439-89-6	
Magnesium, Dissolved	**79900**	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:10	7439-95-4	
Potassium, Dissolved	**1900**	ug/L	500	1	08/04/14 11:50	08/06/14 15:10	7440-09-7	
Sodium, Dissolved	**92700**	ug/L	500	1	08/04/14 11:50	08/06/14 15:10	7440-23-5	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		08/05/14 15:32	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		08/05/14 15:32	100-41-4	
Toluene	ND	ug/L	1.0	1		08/05/14 15:32	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		08/05/14 15:32	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%	80-120	1		08/05/14 15:32	2037-26-5	
4-Bromofluorobenzene (S)	102	%	80-120	1		08/05/14 15:32	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	80-120	1		08/05/14 15:32	17060-07-0	
Preservation pH	**1.0**		0.10	1		08/05/14 15:32		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**536**	mg/L	20.0	1		08/07/14 13:44		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		08/07/14 13:44		
Alkalinity, Total as CaCO3	**536**	mg/L	20.0	1		08/07/14 13:44		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		08/03/14 17:21	24959-67-9	
Chloride	**38.6**	mg/L	5.0	5		08/06/14 13:45	16887-00-6	
Sulfate	**306**	mg/L	50.0	50		08/06/14 14:00	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**2.2**	mg/L	0.10	1		07/31/14 13:50		
Nitrogen, Nitrite	ND	mg/L	0.10	1		07/31/14 13:50		
Nitrogen, NO2 plus NO3	**2.2**	mg/L	0.10	1		07/31/14 13:50		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Sample: MW05-140730 **Lab ID: 60174747007** Collected: 07/30/14 14:45 Received: 07/31/14 10:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**7140**	ug/L	50.0	5	08/01/14 17:10	08/06/14 15:46	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**362000**	ug/L	100	1	08/04/14 11:50	08/06/14 15:16	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	08/04/14 11:50	08/06/14 15:16	7439-89-6	
Magnesium, Dissolved	**554000**	ug/L	250	5	08/04/14 11:50	08/06/14 15:55	7439-95-4	
Potassium, Dissolved	**9360**	ug/L	2500	5	08/04/14 11:50	08/06/14 15:55	7440-09-7	
Sodium, Dissolved	**1030000**	ug/L	2500	5	08/04/14 11:50	08/06/14 15:55	7440-23-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: AIR/20965 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006

METHOD BLANK: 1751913 Matrix: Water
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	08/04/14 18:04	
Ethene	ug/L	ND	6.2	08/04/14 18:04	
Methane	ug/L	ND	6.6	08/04/14 18:04	

LABORATORY CONTROL SAMPLE & LCSD: 1751914 1751915

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	118	112	104	99	85-115	5	20	
Ethene	ug/L	106	110	105	104	99	85-115	5	20	
Methane	ug/L	60.7	62.9	61.8	104	102	85-115	2	20	

SAMPLE DUPLICATE: 1751916

Parameter	Units	10276054001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	28.1	25.5	10	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: MPRP/28321 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006, 60174747007

METHOD BLANK: 1419187 Matrix: Water
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006, 60174747007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	08/06/14 15:21	

LABORATORY CONTROL SAMPLE: 1419188

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Strontium	ug/L	1000	1010	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1419189 1419190

Parameter	Units	60174747001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	3180	1000	1000	4110	4180	93	100	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: MPRP/28337 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006, 60174747007

METHOD BLANK: 1420126 Matrix: Water
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006, 60174747007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	08/06/14 14:49	
Iron, Dissolved	ug/L	ND	50.0	08/06/14 14:49	
Magnesium, Dissolved	ug/L	ND	50.0	08/06/14 14:49	
Potassium, Dissolved	ug/L	ND	500	08/06/14 14:49	
Sodium, Dissolved	ug/L	ND	500	08/06/14 14:49	

LABORATORY CONTROL SAMPLE: 1420127

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9840	98	80-120	
Iron, Dissolved	ug/L	10000	10300	103	80-120	
Magnesium, Dissolved	ug/L	10000	10300	103	80-120	
Potassium, Dissolved	ug/L	10000	10400	104	80-120	
Sodium, Dissolved	ug/L	10000	10400	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1420128 1420129

Parameter	Units	60174747001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	86900	10000	10000	97200	96600	103	97	75-125	1	20	
Iron, Dissolved	ug/L	ND	10000	10000	9980	9920	100	99	75-125	1	20	
Magnesium, Dissolved	ug/L	74800	10000	10000	84800	83500	100	87	75-125	2	20	
Potassium, Dissolved	ug/L	2780	10000	10000	13400	13300	106	105	75-125	1	20	
Sodium, Dissolved	ug/L	127000	10000	10000	138000	139000	111	118	75-125	1	20	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: MSV/63311 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005

METHOD BLANK: 1418706 Matrix: Water
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	08/01/14 19:33	
Ethylbenzene	ug/L	ND	1.0	08/01/14 19:33	
Toluene	ug/L	ND	1.0	08/01/14 19:33	
Xylene (Total)	ug/L	ND	3.0	08/01/14 19:33	
1,2-Dichloroethane-d4 (S)	%	92	80-120	08/01/14 19:33	
4-Bromofluorobenzene (S)	%	91	80-120	08/01/14 19:33	
Toluene-d8 (S)	%	107	80-120	08/01/14 19:33	

LABORATORY CONTROL SAMPLE: 1418707

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	21.8	109	80-120	
Ethylbenzene	ug/L	20	21.1	106	80-121	
Toluene	ug/L	20	20.6	103	80-122	
Xylene (Total)	ug/L	60	62.8	105	80-121	
1,2-Dichloroethane-d4 (S)	%			96	80-120	
4-Bromofluorobenzene (S)	%			88	80-120	
Toluene-d8 (S)	%			99	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: MSV/63377
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60174747006

METHOD BLANK: 1420708
Matrix: Water
Associated Lab Samples: 60174747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	08/05/14 12:34	
Ethylbenzene	ug/L	ND	1.0	08/05/14 12:34	
Toluene	ug/L	ND	1.0	08/05/14 12:34	
Xylene (Total)	ug/L	ND	3.0	08/05/14 12:34	
1,2-Dichloroethane-d4 (S)	%	97	80-120	08/05/14 12:34	
4-Bromofluorobenzene (S)	%	101	80-120	08/05/14 12:34	
Toluene-d8 (S)	%	104	80-120	08/05/14 12:34	

LABORATORY CONTROL SAMPLE: 1420709

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.3	101	80-120	
Ethylbenzene	ug/L	20	19.9	100	80-121	
Toluene	ug/L	20	20.0	100	80-122	
Xylene (Total)	ug/L	60	59.9	100	80-121	
1,2-Dichloroethane-d4 (S)	%			95	80-120	
4-Bromofluorobenzene (S)	%			102	80-120	
Toluene-d8 (S)	%			102	80-120	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: WET/49425 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005

METHOD BLANK: 1420912 Matrix: Water
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	08/06/14 14:13	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	08/06/14 14:13	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	08/06/14 14:13	

LABORATORY CONTROL SAMPLE: 1420913

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	499	100	90-110	

SAMPLE DUPLICATE: 1420914

Parameter	Units	60174402011 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	530	547	3	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	530	547	3	10	

SAMPLE DUPLICATE: 1420915

Parameter	Units	60174456018 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	196	201	3	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	196	201	3	10	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: WET/49448 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60174747006

METHOD BLANK: 1421620 Matrix: Water
Associated Lab Samples: 60174747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	08/07/14 13:37	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	08/07/14 13:37	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	08/07/14 13:37	

LABORATORY CONTROL SAMPLE: 1421621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	509	102	90-110	

SAMPLE DUPLICATE: 1421622

Parameter	Units	60174471001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	423	424	0	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	423	424	0	10	

SAMPLE DUPLICATE: 1421623

Parameter	Units	60174471008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	477	496	4	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	477	496	4	10	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: WETA/30470 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006

METHOD BLANK: 1419264 Matrix: Water
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	08/03/14 14:43	

METHOD BLANK: 1420552 Matrix: Water
Associated Lab Samples: 60174747002, 60174747003, 60174747004, 60174747005, 60174747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/06/14 08:57	
Sulfate	mg/L	ND	1.0	08/06/14 08:57	

METHOD BLANK: 1421894 Matrix: Water
Associated Lab Samples: 60174747001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/07/14 10:52	
Sulfate	mg/L	ND	1.0	08/07/14 10:52	

LABORATORY CONTROL SAMPLE: 1419265

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.2	104	90-110	

LABORATORY CONTROL SAMPLE: 1420553

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

LABORATORY CONTROL SAMPLE: 1421895

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1419266 1419267

Parameter	Units	60174747001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	ND	5	5	5.2	5.2	104	104	80-120	0	15	
Chloride	mg/L	34.5	25	25	57.7	57.5	93	92	80-120	0	15	
Sulfate	mg/L	323	250	250	558	557	94	94	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

QC Batch: WETA/30457 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006

METHOD BLANK: 1418685 Matrix: Water
Associated Lab Samples: 60174747001, 60174747002, 60174747003, 60174747004, 60174747005, 60174747006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	07/31/14 13:28	
Nitrogen, Nitrite	mg/L	ND	0.10	07/31/14 13:28	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	07/31/14 13:28	

LABORATORY CONTROL SAMPLE: 1418686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.7	107	85-115	
Nitrogen, Nitrite	mg/L	.4	0.38	96	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.1	105	90-110	

MATRIX SPIKE SAMPLE: 1418687

Parameter	Units	60174723001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	9.2	8	16.8	95	85-115	
Nitrogen, Nitrite	mg/L	ND	2	2.1	106	90-110	
Nitrogen, NO2 plus NO3	mg/L	9.2	10	18.9	97	90-110	

MATRIX SPIKE SAMPLE: 1418688

Parameter	Units	60174742001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.53	1.6	2.3	110	85-115	
Nitrogen, Nitrite	mg/L	ND	.4	0.43	107	90-110	
Nitrogen, NO2 plus NO3	mg/L	0.53	2	2.7	109	90-110	

SAMPLE DUPLICATE: 1418689

Parameter	Units	60174747004 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	4.2	4.2	0	20	
Nitrogen, Nitrite	mg/L	ND	ND		20	
Nitrogen, NO2 plus NO3	mg/L	4.2	4.2	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-M	Pace Analytical Services - Minneapolis

BATCH QUALIFIERS

Batch: MSV/63311

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: MSV/63377

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174747

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60174747001	**RD1-MW01-140730**	RSK 175	AIR/20965		
60174747002	**RD1-MW02-140730**	RSK 175	AIR/20965		
60174747003	**RD1-MW03R-140730**	RSK 175	AIR/20965		
60174747004	**RD1-MW04-140730**	RSK 175	AIR/20965		
60174747005	**RD1-MW05-140730**	RSK 175	AIR/20965		
60174747006	**RD1-MW06-140730**	RSK 175	AIR/20965		
60174747001	**RD1-MW01-140730**	EPA 3010	MPRP/28321	EPA 6010	ICP/21382
60174747002	**RD1-MW02-140730**	EPA 3010	MPRP/28321	EPA 6010	ICP/21382
60174747003	**RD1-MW03R-140730**	EPA 3010	MPRP/28321	EPA 6010	ICP/21382
60174747004	**RD1-MW04-140730**	EPA 3010	MPRP/28321	EPA 6010	ICP/21382
60174747005	**RD1-MW05-140730**	EPA 3010	MPRP/28321	EPA 6010	ICP/21382
60174747006	**RD1-MW06-140730**	EPA 3010	MPRP/28321	EPA 6010	ICP/21382
60174747007	**MW05-140730**	EPA 3010	MPRP/28321	EPA 6010	ICP/21382
60174747001	**RD1-MW01-140730**	EPA 3010	MPRP/28337	EPA 6010	ICP/21399
60174747002	**RD1-MW02-140730**	EPA 3010	MPRP/28337	EPA 6010	ICP/21399
60174747003	**RD1-MW03R-140730**	EPA 3010	MPRP/28337	EPA 6010	ICP/21399
60174747004	**RD1-MW04-140730**	EPA 3010	MPRP/28337	EPA 6010	ICP/21399
60174747005	**RD1-MW05-140730**	EPA 3010	MPRP/28337	EPA 6010	ICP/21399
60174747006	**RD1-MW06-140730**	EPA 3010	MPRP/28337	EPA 6010	ICP/21399
60174747007	**MW05-140730**	EPA 3010	MPRP/28337	EPA 6010	ICP/21399
60174747001	**RD1-MW01-140730**	EPA 8260	MSV/63311		
60174747002	**RD1-MW02-140730**	EPA 8260	MSV/63311		
60174747003	**RD1-MW03R-140730**	EPA 8260	MSV/63311		
60174747004	**RD1-MW04-140730**	EPA 8260	MSV/63311		
60174747005	**RD1-MW05-140730**	EPA 8260	MSV/63311		
60174747006	**RD1-MW06-140730**	EPA 8260	MSV/63377		
60174747001	**RD1-MW01-140730**	SM 2320B	WET/49425		
60174747002	**RD1-MW02-140730**	SM 2320B	WET/49425		
60174747003	**RD1-MW03R-140730**	SM 2320B	WET/49425		
60174747004	**RD1-MW04-140730**	SM 2320B	WET/49425		
60174747005	**RD1-MW05-140730**	SM 2320B	WET/49425		
60174747006	**RD1-MW06-140730**	SM 2320B	WET/49448		
60174747001	**RD1-MW01-140730**	EPA 300.0	WETA/30470		
60174747002	**RD1-MW02-140730**	EPA 300.0	WETA/30470		
60174747003	**RD1-MW03R-140730**	EPA 300.0	WETA/30470		
60174747004	**RD1-MW04-140730**	EPA 300.0	WETA/30470		
60174747005	**RD1-MW05-140730**	EPA 300.0	WETA/30470		
60174747006	**RD1-MW06-140730**	EPA 300.0	WETA/30470		
60174747001	**RD1-MW01-140730**	EPA 353.2	WETA/30457		
60174747002	**RD1-MW02-140730**	EPA 353.2	WETA/30457		
60174747003	**RD1-MW03R-140730**	EPA 353.2	WETA/30457		
60174747004	**RD1-MW04-140730**	EPA 353.2	WETA/30457		
60174747005	**RD1-MW05-140730**	EPA 353.2	WETA/30457		
60174747006	**RD1-MW06-140730**	EPA 353.2	WETA/30457		

REPORT OF LABORATORY ANALYSIS

Pace Analytical
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Sample Condition Upon Receipt

WO#: 60174747

60174747

Client Name: Terracon

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☑ PEX

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☑ None ☐ Other ☑ ZPAC

Thermometer Used: (T-239) / T-194 **Type of Ice:** (Wet) Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.4

Temperature should be above freezing to 6°C

Date and initials of person examining contents: atl

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	6. NO2/NO3
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	Extra sample: RDI-MW05-140730 collected 7/30 @ 14:45 WT (COPBU) (COP3N)2x
Includes date/time/ID/analyses Matrix: WT		13.
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	Sample RDI-MW06 140730 initial pH 5.5 added 0.5mL HNO3 Final pH 2.0
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☑No ☐N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☑Yes ☐No	Initial when completed atl / Lot # of added preservative 12513-2-3-2
Trip Blank present:	☐Yes ☑No ☐N/A	
Pace Trip Blank lot # (if purchased): _____		15.
Headspace in VOA vials (>6mm):	☐Yes ☑No ☐N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☑N/A	17. List State:

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: Meredith Stewart Date/Time: 7/31/14

Comments/ Resolution: Analyze extra sample for total & dissolved metals only atmw 7/31/14

Project Manager Review: atmw Date: 7/31/14

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	Terracon
Address:	10625 N. I-70 Frontage Rd.
	Wheat Ridge, CO 80033
Email To:	jpansteu@terracon.com
Phone: 303-423-3300	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Same as Section "A"
Copy To:	
Purchase Order No.:	
Project Name:	O&G Wellsite GW
Project Number:	25127127

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson
Pace Profile #:	6694, 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: CO

Section D Required Client information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	8260 BTEX	RSK-175 MEE	Nitrate & Nitrite	Alkalinity	Bromide, Chloride, Sulfate	6010-Diss Metals*	6010 Total Strontium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	RDI-MW01-140730	WT	G	7/30/14	1143	7/30/14	1143		9	5		1	3					X	X	X	X	X	X	X		60174747
2	RDI-MW02-140730	WT	G	7/30/14	1213	7/30/14	1213		9	5		1	3					X	X	X	X	X	X	X		
3	RDI-MW03R-140730	WT	G	7/30/14	1322	7/30/14	1322		9	5		1	3					X	X	X	X	X	X	X		
4	RDI-MW04-140730	WT	G	7/30/14	1238	7/30/14	1238		9	5		1	3					X	X	X	X	X	X	X		
5	RDI-MW05-140730	WT	G	7/30/14	1257	7/30/14	1257		9	5		1	3					X	X	X	X	X	X	X		
6	RDI-MW06-140730	WT	G	7/30/14	1420	7/30/14	1420		9	5		1	3					X	X	X	X	X	X	X		
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Ca, Mg, Na, Fe, K	Meredith Stewart/TC	7/30/14	1710	[illegible]/PACE	7/30/14	1710				
	[illegible]/PACE	7/30/14	1715	[illegible]/PACE	7/31	10:10	2.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Meredith Stewart

SIGNATURE of SAMPLER: Meredith Stewart DATE Signed (MM/DD/YY): 7/30/14

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Chain of Custody

RUSH DW 8/1/14

Pace Analytical®
www.pacelabs.com

10276086

Workorder: 60174747 **Workorder Name:** 251 27127 O&G WELLSITE GW **Owner Received Date:** 7/31/2014 **Results Requested By:** 8/7/2014

Report To	Subcontract To
Heather Wilson Pace Analytical Services, Inc. 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665 Fax (913)599-1759	Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-1700

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: none	Requested Analysis: RSK-175 M/E/E	LAB USE ONLY
1	RD1-MW01-140730	PS	7/30/2014 11:43	60174747001	Water	3	X	10276086001
2	RD1-MW02-140730	PS	7/30/2014 12:13	60174747002	Water	3	X	002
3	RD1-MW03R-140730	PS	7/30/2014 13:22	60174747003	Water	3	X	003
4	RD1-MW04-140730	PS	7/30/2014 12:38	60174747004	Water	3	X	004
5	RD1-MW05-140730	PS	7/30/2014 12:57	60174747005	Water	3	X	005
6	RD1-MW06-140730	PS	7/30/2014 14:20	60174747006	Water	3	X	006

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	7/31/14 1700	[signature] Pace	7/31/14 1700
2				
3				

Comments

Cooler Temperature on Receipt 2.2 °C Custody Seal (Y) or N Received on Ice (Y) or N Samples Intact (Y) or N

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Document Revised: 28Feb2014 Page 1 of 1
	Document No.: F-MN-L-213-rev.09	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace - KS

Project #: WO# : 10276086

10276086

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client

☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other: _____

Tracking Number: 6113 5277 9013

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☒ No

Thermom. Used: ☐ B88A9130516413 ☒ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 2.2 **Cooler Temp Corrected (°C):** 2.2 **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Correction Factor:** True **Date and Initials of Person Examining Contents:** DN 8/1/14

Comments:

Chain of Custody Present?	☒ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☒ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☒ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☒ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No	☐ N/A	6.
Rush Turn Around Time Requested?	☒ Yes	☐ No	☐ N/A	7.
Sufficient Volume?	☒ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☒ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☒ Yes	☐ No	☐ N/A	
Containers Intact?	☒ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	☐ Yes	☐ No	☒ N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC	☐ Yes	☒ No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☒ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☒ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 08/01/14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 08, 2014

Jon Anstey
Terracon
10625 W. I-70 Frontage Rd N
Suite 3
Wheat Ridge, CO 80033

RE: Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on August 01, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 13-012-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60174902001	**MW04-140731**	Water	07/31/14 14:08	08/01/14 09:00

Pace Analytical Services, Inc.
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Lenexa, KS 66219
(913)599-5665

SAMPLE ANALYTE COUNT

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60174902001	**MW04-140731**	EPA 6010	SMW	1	PASI-K
		EPA 6010	SMW	5	PASI-K

Pace Analytical Services, Inc.
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

Sample: MW04-140731 **Lab ID: 60174902001** Collected: 07/31/14 14:08 Received: 08/01/14 09:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**8430**	ug/L	10.0	1	08/06/14 11:40	08/07/14 15:15	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**382000**	ug/L	100	1	08/06/14 11:40	08/07/14 14:53	7440-70-2	M1
Iron, Dissolved	ND	ug/L	50.0	1	08/06/14 11:40	08/07/14 14:53	7439-89-6	
Magnesium, Dissolved	**796000**	ug/L	500	10	08/06/14 11:40	08/07/14 16:04	7439-95-4	M1
Potassium, Dissolved	**10600**	ug/L	5000	10	08/06/14 11:40	08/07/14 16:04	7440-09-7	
Sodium, Dissolved	**1560000**	ug/L	5000	10	08/06/14 11:40	08/07/14 16:04	7440-23-5	M1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

QC Batch: MPRP/28372
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Associated Lab Samples: 60174902001

METHOD BLANK: 1421097
Matrix: Water
Associated Lab Samples: 60174902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	08/07/14 15:13	

LABORATORY CONTROL SAMPLE: 1421098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Strontium	ug/L	1000	1010	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1421099 1421100

Parameter	Units	60174902001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	8430	1000	1000	9400	9640	97	121	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

QC Batch: MPRP/28375
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60174902001

METHOD BLANK: 1421111 Matrix: Water
Associated Lab Samples: 60174902001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	08/07/14 14:50	
Iron, Dissolved	ug/L	ND	50.0	08/07/14 14:50	
Magnesium, Dissolved	ug/L	ND	50.0	08/07/14 14:50	
Potassium, Dissolved	ug/L	ND	500	08/07/14 14:50	
Sodium, Dissolved	ug/L	ND	500	08/07/14 14:50	

LABORATORY CONTROL SAMPLE: 1421112

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9790	98	80-120	
Iron, Dissolved	ug/L	10000	10000	100	80-120	
Magnesium, Dissolved	ug/L	10000	10000	100	80-120	
Potassium, Dissolved	ug/L	10000	9780	98	80-120	
Sodium, Dissolved	ug/L	10000	9860	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1421113 1421114

Parameter	Units	60174902001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium, Dissolved	ug/L	382000	10000	10000	384000	398000	23	162	75-125	4	20	M1
Iron, Dissolved	ug/L	ND	10000	10000	9700	9860	97	99	75-125	2	20	
Magnesium, Dissolved	ug/L	796000	10000	10000	794000	831000	-18	357	75-125	5	20	M1
Potassium, Dissolved	ug/L	10600	10000	10000	20400	21400	97	108	75-125	5	20	
Sodium, Dissolved	ug/L	1560000	10000	10000	1570000	1600000	60	430	75-125	2	20	M1

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

Pace Analytical Services, Inc.
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25127127 O&G WELLSITE GW
Pace Project No.: 60174902

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60174902001	**MW04-140731**	EPA 3010	MPRP/28372	EPA 6010	ICP/21421
60174902001	**MW04-140731**	EPA 3010	MPRP/28375	EPA 6010	ICP/21420

Pace Analytical
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Sample Condition Upon Receipt

WO# : 60174902

60174902

Client Name: Terracon

Optional
Proj Due Date:
Proj Name:

Courier: Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other ☒ PEX

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ 2PIC

Thermometer Used: T-239 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 0.8

Date and initials of person examining contents: JV 8/1/14

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☑Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☑Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☑Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	7.
Sufficient volume:	☑Yes ☐No ☐N/A	8.
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	9.
Containers intact:	☑Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☑N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	12.
Sample labels match COC:	☑Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: WT		13.
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	14.
Exceptions: VOA, coliform, TOC, O&G, WI-DRO (water), Phenolics	☐Yes ☑No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☐No ☑N/A	
Pace Trip Blank lot # (if purchased): _____		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☑N/A	17. List State:

HMW

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HMW Date: 8/1/14

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1695515

Section A Required Client Information:

Company: TERRACON
Address: 10625 N. I-70 FRONTAGE ROAD
WHEATRIDGE, CO 80033
Email To: JPANSTEY@TERRACON.COM
Phone: 303-423-3300 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: SAME AS SECTION "A"
Copy To:
Purchase Order No.:
Project Name: OIGWELLSITE GW
Project Number: 25727127

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager: HEATHER WILSON
Pace Profile #: 6694, 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: CO

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 6010 - DISS. METALS*	6010 - TOTAL STRONTIUM	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW04-140731	WT	G	7/31/14	1408	7/31/14	1408		2	1		1						X	X		60174902
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

IBP2U IBP2N-5 001

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*Ca, Mg, Na, Fe, K	A-S / JT	7/31/14	1525	PACE	7/31/14	1605	
	PACE	7/31/14	1615	PACE PM 8/1/14	8/1/14	0900	OK Y Y Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: ANDREW SAFULKO
SIGNATURE of SAMPLER: A-S
DATE Signed (MM/DD/YY): 07/31/14

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.