FINAL

FIRST QUARTER 2013 MONITORING REPORT

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

May 31, 2013
Terracon Project No. 25127127

FINAL

Prepared for:
City of Longmont
Longmont, Colorado

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

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Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

May 31, 2013

Terracon

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 Quarter 2013 Monitoring Report
Groundwater Quality Monitoring Program
Active Oil and Gas Well Sites
Longmont, Colorado
Terracon Project No. 25127127

Dear Mr. Wolford:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report of the first quarter 2013 Groundwater Quality Monitoring Program activities completed at 10 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 completion of soil borings and 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. Terracon conducted the monitoring in general accordance with our proposal (P25120301) dated November 14, 2012, and the Sampling and analysis Plan dated February 1, 2013 and purchase order 300389.

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

Daniel F. Schneider, P.E., CHMM
Environmental Department Manager

TABLE OF CONTENTS

1.0 SITE DESCRIPTION 1
2.0 SCOPE OF SERVICES 1
2.1 Standard of Care 2
2.2 Additional Scope Limitations 2
2.3 Reliance 2
3.0 FIELD INVESTIGATION 2
3.1 Soil Boring and Monitoring Well Installation 3
3.2 Well Development 4
3.3 Groundwater Sampling 5
3.4 Well Survey 6
4.0 RESULTS OF THE FIELD INVESTIGATION 6
4.1 Geology 6
4.2 Hydrogeology 6
4.3 Field Screening 7
4.4 Investigation Derived Waste (IDW) 7
5.0 ANALYTICAL RESULTS 7
5.1 BTEX in Groundwater 8
5.2 PAHs (Polycyclic Aromatic Hydrocarbon) in Groundwater 8
5.3 Dissolved Gasses 9
5.4 Inorganics in Groundwater 9
5.5 General Groundwater Parameters 11
5.6 Laboratory Quality Control 11
6.0 CONCLUSIONS 12
7.0 RECOMMENDATIONS 14

APPENDIX A – TABLES AND FIGURES

Table 1 – Survey Data
Table 2 – Groundwater Elevation Data
Table 3 – Groundwater Analytical Results
Figure 1 – Well Site Locations Map
Figure 2 – Site Diagram: City of Longmont #1
Figure 3 – Site Diagram: Domenico #1
Figure 4 – Site Diagram: Evans #6 Wellhead
Figure 5 – Site Diagram: Evans #6 Tank Battery
Figure 6 – Site Diagram: Longmont #8-10k
Figure 7 – Site Diagram: Powell #1
Figure 8 – Site Diagram: Serafini Gas Unit
Figure 9 – Site Diagram: Sherwood #1
Figure 10 – Site Diagram: Sherwood #2
Figure 11 – Site Diagram: Stamp 31-2C
Figure 12 – Potentiometric Surface Map: Various Well Sites
Figure 13 – Potentiometric Surface Map: Stamp 31-2C

APPENDIX B – NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

APPENDIX C – BORING LOGS AND WELL COMPLETION DETAILS

APPENDIX D – WELL DEVELOPMENT FORMS

APPENDIX E – ANALYTICAL REPORT AND CHAIN OF CUSTODY

FIRST QUARTER 2013 MONITORING REPORT
Groundwater Quality Monitoring Program
Active Oil and Gas Well Sites
Longmont, Colorado

Terracon Project No. 25127127
May 31, 2013

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. These 9 well sites and associated tank batteries are 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. Site Diagrams are included as Figures 2 through 11 in Appendix A.

2.0 SCOPE OF SERVICES

Terracon previously 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 project was completed.

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 on an annual basis, and analyzing the samples for the Colorado Oil and Gas Conservation Commission (COGCC) recommended constituents for monitoring oil and gas production facilities.

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 LSI 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 United States Environmental Protection Agency (USEPA) Level D work attire consisting of hard hats, safety glasses, protective gloves, and protective boots.

Prior to mobilizing to the field, Terracon developed a site-specific Sampling and Analysis Plan (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.

Terracon contacted the Utility Notification Center of Colorado (UNCC) and requested location and markings for utilities that UNCC was responsible for before commencing intrusive activities at the sites. Terracon arranged utility locate meetings at each of the various well sites. Personnel present at the meetings included a Terracon field geologist, underground utility locators representing UNCC, and the well site operator. Additionally, Terracon used a magnetometer to evaluate the presence of buried structures. The results of these on-site utility meetings were discussed with the City and the proposed drilling locations were finalized and agreed upon by the City's representative.

Terracon submitted the Notice of Intents (NOIs) to Construct Monitoring Hole(s) to the Colorado Division of Water Resources on January 18, 2013. The NOIs can be found in Appendix B of this document.

3.1 Soil Boring and Monitoring Well Installation

Terracon subcontracted DrillPro Services, Inc. to advance three boreholes and install groundwater monitoring wells to evaluate groundwater quality, flow direction and hydraulic gradient at the each of the following well sites:

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

TOP Operating Company, the operator of the Stamp 31-2C well site, granted the City permission to collect groundwater samples from three (MW-1, MW-2 and MW-4) of the five existing monitoring wells, therefore soil borings and wells were not installed at that well site.

At each of the well sites one monitoring well was installed in the assumed upgradient direction from the well site to evaluate background groundwater conditions beneath the well site. The remaining two monitoring wells were installed in the assumed downgradient direction from the well site to evaluate groundwater conditions beneath and leaving the well site.

Terracon's drilling crew advanced each borehole using a hollow-stem auger approximately 3 to 5 feet into the observed water table, to depths ranging from 10 to 20.5 feet below ground surface (bgs). Soils were observed at 5-foot intervals with a split-barrel sampling tool. Two drill rigs were mobilized to the well sites in an effort to avoid getting the rig stuck in the loose and clayey surface soil due to the precipitation. The second rig, the Hurricane system rig, was brought on site because it is lighter weight and more easily maneuvered.

Terracon field screened soil samples for organic vapors using a photoionization detector (PID). The PID provides a direct reading in parts per million (ppm) isobutylene equivalents. Upon removal of the split-barrel sampler from the borehole, Terracon put a portion of each sample in a sealable plastic bag. After a stabilization period, Terracon screened the headspace above the soil using the PID equipped with a 9.8 electron-volt (eV) ultraviolet lamp source. The PID was calibrated in accordance with the manufacturer's recommendations before the field activities. Soils were logged by the field geologist using the Unified Soil Classification System (USCS), which included describing the texture, hardness, plasticity, color, odor and moisture content. Screening results and field observations are summarized on the Boring Logs and Well Completion Details, which are included in Appendix B.

After drilling was completed, 2-inch diameter flush-mounted groundwater monitoring wells were constructed inside the hollow-stem augers. Each well was constructed with flush-threaded Schedule 40 PVC casing, 5-foot to 15-foot lengths of 0.010-inch slotted screen, a threaded bottom cap, expandable J-plug, silica sand pack, bentonite seal and a flush-mounted well vault in accordance with Terracon's standard operating procedures. The well construction diagrams are depicted and summarized on the Soil Boring Logs and Well Completion Diagrams, which are included in Appendix B.

3.2 Well Development

The groundwater monitoring wells were developed and sampled no sooner than 24 hours after the installation. Prior to beginning the well development, the depth to groundwater was measured and recorded to calculate the volume of water within the casing. The depth to groundwater was measured using a water level indicator from a mark made on the north side of

the top of the PVC well casing. Future water level measurements will be collected from the north mark on the well casing.

Well development was performed by repeated surging the well screened interval with a 2-inch diameter surge block and removing groundwater with a disposable bailer. The well development was considered adequate when the monitored field parameters of temperature, specific conductance and pH were stabilized to within 10% of the previous measurement. These field parameters were measured following the removal of one well casing volume of groundwater. As a minimum, five well casing volumes were removed. Following the completion of the development, the depth to water and total volume of water removed was recorded. Field measurements and data were recorded on the Well Development Forms (Appendix B).

3.3 Groundwater Sampling

Groundwater samples were collected immediately following completion of the development activities. The wells were considered adequately purged when a minimum of five saturated well casing volumes were removed and field parameters had stabilized. The field measurements and data will be recorded on the development logs (Appendix D).

A groundwater sample was collected using a new disposable bailer from each of the monitoring wells. The sample was placed in a laboratory provided, pre-cleaned container 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 on the table below on a standard turn-around time (i.e., 7 to 10 business days).

Analytical Constituents and Methods

Constituents	Analytical Method
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	EPA Method 8260
Polycyclic Aromatic Hydrocarbons (PAH)	EPA Method 8270 SIM
Dissolved Gasses: Methane, Ethane and Ethylene	RSK 175
Major Cations – Dissolved (Calcium, Iron, Magnesium, Potassium and Sodium)	EPA Method 6010B
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
pH	SM 4500 H+B

Constituents	Analytical Method
Specific Conductivity	SM 2510B

The groundwater sample naming convention used is as follows:

- [Site Abbreviation]-[Well Designation]-[6 Digit Date: YYMMDD]
- Example: DM1-MW01-130319 is the groundwater sample collected from Domenico #1 well site, monitoring well MW1 on March 19, 2013

The groundwater samples were submitted to a 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.

3.4 Well Survey

Following the installation of the groundwater monitoring wells, the locations were surveyed by Flatiron Survey, Inc. of Boulder, Colorado, a licensed land surveyor. Elevations were measured to an accuracy of ±0.01 feet. The survey datum was in State Plane NAD83 using U.S. survey in feet (for horizontal) and NAVD88 (for vertical) datum. The monitoring well location survey data is presented in Table 1. The horizontal survey data was used to generate the site figures (Figures 2 through 11). The elevation of the top of the well casing was used to calculate the groundwater elevations as provided in Table 2.

4.0 RESULTS OF THE FIELD INVESTIGATION

4.1 Geology

The boring logs in Appendix C summarize the observed soil stratigraphy. In general, alluvial material consisting of sand and gravel mixed with clay and silt was encountered typical of the Piney Creek Alluvium (Qa), Broadway and Louviers Alluviums (Qg), based on the Geologic Map of Colorado (Tweto, Ogden, 1979). Bedrock was observed to be a medium grained bluish-gray sandstone ranging in depth from 10 to 20 feet bgs.

4.2 Hydrogeology

Groundwater was encountered from 3.21 feet below ground surface (bgs) as observed in monitoring well LG8-MW03 to 13.04’ bgs as observed in PL1-MW03. Groundwater elevations

were observed ranging from 4,850.12 feet above mean sea level (amsl) in monitoring well DM1-MW03 to 4,951.15' amsl in monitoring well S31-MW01. Depth to groundwater and groundwater elevation data are summarized in Table 2.

Figure 12 and 13 illustrates the potentiometric surface based on the groundwater elevations measured in March 2013 (note, Figure 12 includes all the well sites except Stamp 31-2C, which is on Figure 13). Based on the potentiometric surface, 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:

- City of Longmont #1: northeast towards the St. Vrain;
- Domenico #1: northeast away from the Boulder Creek due to the multiple ponds;
- Evans #6 Wellhead: southeast towards the St. Vrain;
- Evans #6 Tank Battery: southeast towards the St. Vrain;
- Longmont #8-10K: northeast towards the St. Vrain;
- Powell #1: northeast towards the St. Vrain;
- Serafini Gas Unit: northeast towards the St. Vrain;
- Sherwood #1: northeast towards the St. Vrain;
- Sherwood #2: northeast towards the St. Vrain; and,
- Stamp 31-2C: southeast towards Union Reservoir.

4.3 Field Screening

PID field screening results ranged from 0.0 ppm to 4.8 ppm. The Terracon geologist did not observe any soil staining or petroleum hydrocarbon odors in the soil samples during drilling activities. No soil samples were collected for laboratory analysis.

4.4 Investigation Derived Waste (IDW)

Investigation derived waste (IDW) was handled based on field observations. Soil cuttings generated from drilling were thin spread on the ground in the vicinity of the bore hole. Purge water generated during development was emptied on the ground near the monitoring wells.

5.0 ANALYTICAL RESULTS

The laboratory analytical report and chain-of-custody record are attached in Appendix E. The groundwater sample results are summarized in Table 3. The following sections summarize the results of the analytical testing.

Laboratory analytical results for the groundwater samples were compared to the COGCC Table 910-1 standards (May 30, 2011) and the Colorado Department of Public Health and

Environment's (CDPHE) Basic Standards for Groundwater (January 31, 2013). A summary of concentrations exceeding these standards in the groundwater samples is included in Table 3.

Three groundwater samples were collected from each of the 10 well sites for a total of 30 samples. The groundwater analytical results are discussed in the following sections.

5.1 BTEX in Groundwater

BTEX compounds were detected in one sample above the laboratory reporting limits. Sample S31-MW02-130322 (Stamp 31-2C well site, well MW02 downgradient of the aboveground storage tank) was reported with benzene at 0.0946 milligrams per liter (mg/L), which exceeds 0.005 mg/L standard set by both the COGCC and the CDPHE. This benzene concentration is similar to the historic results reported by Olsson Associates for samples collected from MW02 on August 10, 2012 at 0.470 mg/L and October 30, 2012 at 1.60 mg/L. Sample S31-MW02-130322 was also reported with ethylbenzene at 0.0323 mg/L, which is below the COGCC and CDPHE standard of 0.7 mg/L.

The remaining BTEX analytical results were reported as non-detect at method reporting limits below the COGCC and CDPHE standards.

5.2 PAHs (Polycyclic Aromatic Hydrocarbon) in Groundwater

The following PAH compounds were reported in groundwater samples.

- The PAH compound indeno(1,2,3-cd)pyrene was reported in sample DM1-MW3-130319 (Domenico #1 well site, well MW03) at 0.00042 mg/L, which is above the CDPHE Basic Groundwater Standard of 0.0000048 mg/L (COGCC has not set a standard). Anthracene was reported at a concentration of 0.00011 mg/L, which is below the CDPHE Basic Groundwater Standard of 2.1 mg/L.

- The PAH compound fluoranthene was reported in sample DM1-MW1-130319 (Domenico #1 well site, well MW-01) at 0.00012 mg/L, which is below the CDPHE Basic Groundwater Standard of 0.28 mg/L (COGCC has not set a standard).

- Naphthalene was reported in sample S31-MW02-130322 (Stamp #31-2C well site, well MW02) at a concentration of 0.00056 mg/L, which is below the CDPHE Basic Groundwater Standard of 0.14 mg/L (COGCC has not set a standard).

All other PAH analytical results were reported as non-detect. Several PAH compounds were analyzed with reporting limits above the CDPHE Basic Groundwater Standard in all samples:

benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene.

5.3 Dissolved Gasses

This section describes the dissolved gasses results for the groundwater samples.

- Ethane was reported in groundwater sample S31-MW02-130322 (Stamp #31-2C well site, well MW-02) at a concentration of 0.119 mg/L. Neither the COGCC nor the CDPHE have developed standards for ethane. This sample also contained benzene concentrations above the COGCC and CDPHE standard as described in Section 5.1.

Ethene was not reported above the laboratory reporting limit of 0.0062 mg/L in the samples collected at the various well sites. Neither the COGCC nor the CDPHE have developed standards for ethene.

- The presence of dissolved methane in groundwater may be an indication of a release at an oil and gas well site. Methane was reported above the laboratory reporting limit in 10 of the 30 groundwater samples ranging from 0.0068 to 0.0323 mg/L. These detections were reported in samples collected at the Sherwood #1, Serafini Gas Unit, Evans # 6 wellhead and tank battery, Domenico #1, and Stamp 31-2C well sites.

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).

5.4 Inorganics in Groundwater

Inorganic cations and anions were analyzed to evaluate these secondary indicators of well site releases associated with produced water.

Dissolved iron was reported as non-detect in all samples at a reporting limit of 0.050 mg/L. Currently CDPHE uses a domestic water supply - drinking water standard of 0.3 mg/L and an agricultural standard of 5 mg/L for iron.

Neither the COGCC nor CDPHE have developed standards for the dissolved metals summarized below:

- Calcium was reported at concentrations ranging from 57.7 mg/L to 383 mg/L.
- Magnesium was reported at concentrations ranging from 49 mg/L to 1,400 mg/L.
- Potassium was reported at concentrations ranging from 2.1 mg/L to 26.5 mg/L.
- Sodium was reported at concentrations ranging from 47.7 mg/L to 2,850 mg/L.
- Strontium was reported at concentrations above the laboratory reporting limit in all 30 groundwater samples ranging from 0.965 to 9.7 mg/L with the three highest detections reported in the three Stamp 31-2C monitoring wells.

- Elevated concentrations of sodium may be an indicator of a release at an oil and gas well site due to the salt content of produced water. The two well sites that were reported with sodium above 500 mg/L are the Stamp 31-2C (which as described above has an exceedance for benzene in groundwater) and the Evans #6 Tank Battery.

Alkalinity was reported as calcium carbonate ($CaCO_3$), bicarbonate ($CaCO_3^-$) and total carbonate. All the results for calcium carbonate were reported as non-detect at 20.0 mg/L. The results for bicarbonate were reported ranging from 204 to 860 mg/L. Total carbonate concentrations are the same as the bicarbonate due to the lack of carbonate in the calcium groundwater. Neither the COGCC nor the CDPHE have developed standards for alkalinity.

- Bromide was reported above the laboratory reporting limit in 10 of the 30 groundwater samples ranging from 1.2 to 4.8 mg/L. Neither the COGCC nor the CDPHE have developed standards for bromide. Of the 10 detections one was at the Evens #6 Wellhead, three at the Evens #6 Tank Battery, three at the Domenico #1 Well site (which included the 4.8 mg/L), and three at the Stamp 31-2C Well site.

- Chloride was reported above the laboratory reporting limit in all 30 groundwater samples ranging from 28.3 to 381 mg/L. Elevated concentrations of sodium may be an indicator of a release at an oil and gas well site due to the salt content of produced water. The three well sites that were reported with chloride above 50 mg/L are the Stamp 31-2C (which as described above has an exceedance for benzene in groundwater), the Domenico #1 well site (which was reported with an exceedance for indeno(1,2,3-cd)pyrene) and the Evans #6 Tank Battery. The

sample collected from monitoring well S31-MW01 at the Stamp 31-2C wellsite was reported at 381 mg/L and is the only detection above the CDPHE's domestic water supply – drinking water standard.

- Nitrogen as nitrate was reported above the laboratory reporting limit in 22 of the 30 groundwater sample, with five samples reported above the CDPHE's domestic water supply – drinking water standard of 10 mg/L. All three sample collected at the Sherwood #2 Wellhead (11.4, 13.6, and 13 mg/L) and the sample from CL1-MW01 and CL1-MW03 at the City of Longmont #1 Wellhead (13.9 and 14.8 mg/L, respectively). Nitrogen as nitrite was reported above the laboratory reporting limit in three of the 30 groundwater sample, none of which were reported above the CDPHE's domestic water supply – drinking water standard of 1 mg/L. Nitrogen as nitrate and nitrite was reported similarly to the nitrogen as nitrate with the same samples exceeding the CDPHE's domestic water supply – drinking water standard of 10 mg/L.

- Sulfate was reported above the laboratory reporting limit in all 30 groundwater samples ranging from 152 to 13,200 mg/L. Of these detections, 24 were reported above the CDPHE's domestic water supply – drinking water standard of 250 mg/L. The six that did not exceed this standard were collected at the City of Longmont #1 Wellhead and Serafini Gas Unit sites.

Sulfide was not reported above the laboratory detection limit of 0.050 mg/L in the samples collected at the various well sites. Neither the COGCC nor the CDPHE have developed standards for sulfide.

5.5 General Groundwater Parameters

The specific conductance was reported in the groundwater samples ranging from 917 to 17,200 microseimans per centimeter (µmhos/cm). As anticipated, elevated concentrations of specific conductance were reported in groundwater samples with higher concentrations of dissolved solids (alkalinity, bromide, chloride, nitrate, nitrite, sulfate and sulfide).

Groundwater in the wells was measured to have a neutral pH, as reported by the laboratory with pH ranging from 7.2 to 7.9 standard pH units, which is within the range of the CDPHE's domestic water supply – drinking water standard of 6.5 to 8.5.

5.6 Laboratory Quality Control

The laboratory quality control documentation is included in the laboratory data reports in Appendix E. The analytical report 60140850 was originally issued on March 28, 2013. The

original report has three sample identifications mislabeled. This typographical error was corrected and the report was re-issued on April 12, 2013.

The laboratory analytical data report, the analytical data presented on the table and the associated analytical discussions are presented with the laboratory reporting limit, which is the lowest standard concentration calibration curve of the instrument used for the sample analysis. For this project the reporting limits are higher concentrations than the method detection limits.

The PAH samples collected from the groundwater monitoring wells at Sherwood #1 and Sherwood #2 on March 18, 2013 were originally analyzed out of hold time due to calibration and quality control issues with the instruments. A replacement set of PAH samples were collected from the well sites on April 1, 2013 and analyzed. The replacement samples analytical data is used in this report.

The 300.0 nitrate-nitrite analyses were reported by Pace to have quality control issues in laboratory reports 60140684 and 60141077. Samples were reported with the following qualifiers:

- D6: the relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
- M1: Matrix spike recover exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

Terracon believes the analytical data is usable for the purposes of this groundwater quality monitoring report.

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 impacts are suspected at the Sherwood #1 well site. Although analyzed constituents were not reported above respective COGCC or CDPHE Basic Groundwater Standard in three groundwater samples collected from the well site, **dissolved methane was reported above the laboratory reporting limit in a groundwater sample collected at the well site**.

- Groundwater impacts are **not** suspected at the Sherwood #2 well site since analyzed constituents were not reported above respective COGCC or CDPHE Basic Groundwater Standard in three groundwater samples collected from the well site. The only parameters that were reported as an exceedance was nitrate

and total nitrogen and sulfate above the CDPHE's domestic water supply – human health standards and drinking water standard, respectively.

- Groundwater impacts are **not** suspected at the City of Longmont #1 well site since analyzed constituents were not reported above respective COGCC or CDPHE Basic Groundwater Standard in three groundwater samples collected from the well site. The only parameters that were reported as an exceedance were nitrate and total nitrogen and sulfate above the CDPHE's domestic water supply – human health standards and drinking water standard, respectively in monitoring wells CL1-MW01 and CL1-MW03.

- Groundwater impacts are suspected at the Serafini Gas Unit well site. Although the analyzed constituents were not reported above respective COGCC or CDPHE Basic Groundwater Standard in three groundwater samples collected from the well site, ***dissolved methane was reported above the laboratory reporting limit in a groundwater sample collected at the well site.***

- Groundwater impacts are **not** suspected at the Powell #1 well site since analyzed constituents were not reported above respective COGCC or CDPHE Basic Groundwater Standard in three groundwater samples collected from the well site. The only parameter that was reported as an exceedance was sulfate above the CDPHE's domestic water supply – drinking water standard.

- Groundwater impacts are suspected at the Evans #6 wellhead. Although analyzed constituents were not reported above respective COGCC or CDPHE Basic Groundwater Standard in three groundwater samples collected from the well site, ***dissolved methane was reported above the laboratory reporting limit in two groundwater samples collected at the well site.*** The only parameter that was reported as an exceedance was sulfate above the CDPHE's domestic water supply – drinking water standard.

- **Potential groundwater impacts are suspected at the Evans #6 tank battery due to the elevated concentrations of sodium and chloride, which may be indicators of a release at an oil and gas well site.** The only parameter that was reported above an existing standard was sulfate above the CDPHE's domestic water supply – drinking water standard. ***Dissolved methane was reported above the laboratory reporting limit in two groundwater samples collected at the well site.***

- Groundwater impacts are **not** suspected at the Longmont #8-10K well site since analyzed constituents were not reported above respective COGCC or CDPHE

Basic Groundwater Standard in three groundwater samples collected from the well site. The only parameter that was reported as an exceedance was sulfate above the CDPHE's domestic water supply – drinking water standard.

- **Groundwater impacts were reported at the Domenico #1 well site. Indeno(1,2,3-cd)pyrene was reported in the sample collected from monitoring well DM1-MW3 above the CDPHE Basic Groundwater Standard.** Sulfate was reported above the CDPHE's domestic water supply – drinking water standard. ***Dissolved methane was reported above the laboratory reporting limit in two groundwater samples collected at the well site***.

- **Groundwater impacts were reported at the Stamp 31-2C well site. Benzene was reported in the sample collected from monitoring well S31-MW02, which is downgradient of the tank battery and upgradient of the former reserve pit (as indicated on the November 30, 2012 Olsson Associates report). Chloride was reported in well S31-MW01 and sulfate in all three wells above the CDPHE's domestic water supply – drinking water standard.** ***Dissolved methane was reported above the laboratory reporting limit in two groundwater samples collected at the well site.***

On an annual basis, Terracon will monitor the concentrations and trends of water quality indicator parameters (VOCs, SVOCs, dissolved gasses, and inorganic parameters) in each monitoring well. Statistical increases in any parameter may be indicative of a groundwater impact associated with the oil and gas production facility.

7.0 RECOMMENDATIONS

Terracon recommends conducting the additional round of groundwater sampling scheduled to be conducted September 2013 to evaluate the groundwater conditions over time at each of the well sites. Following the second semi-annual groundwater sampling event in September 2013, Terracon will recommend a revised sampling protocol based on the results of the two sampling events. This revised protocol may include modifications to the analyte list, monitoring wells to be sampled, and sampling frequency.

The additional groundwater analytical data collected in September 2013 will also be used to evaluate the background groundwater concentrations for chloride and sulfate to determine the COGCC Table 910-1 values. The additional data will also be used to evaluate the potential releases related to the dissolved methane detections in groundwater. Terracon recommends gas compositional and stable isotope analysis of the methane to determine the source of the methane (thermogenic, biogenic or a mixture of the two) in the subsequent sampling event.

Additionally, Terracon recommends the City discuss the groundwater exceedances at the Domenico #1 and Stamp 31-2C with the operators to determine the path forward to address the impacts to groundwater at these City's properties.

APPENDIX A – Tables and Figures

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

Well ID	Northing	Easting	Elevation
Sherwood #1 Wellhead			
SH1-MW01	1294380.207	3126234.02	4902.753
SH1-MW02	1294530.239	3126302.271	4900.992
SH1-MW03	1294523.082	3126171.828	4901.797
Sherwood #2 Wellhead			
SH2-MW01	1295401.887	3126249.8	4896.755
SH2-MW02	1295546.514	3126290.918	4896.147
SH2-MW03	1295536.814	3126180.703	4896.32
City of Longmont #1 Wellhead			
CL1-MW01	1294427.014	3127567.807	4896.992
CL1-MW02	1294516.459	3127630.58	4896.044
CL1-MW03	1294537.964	3127506.611	4896.328
Serafini Gas Unit			
SGU-MW01	1295379.281	3128387.298	4892.365
SGU-MW02	1295573.321	3128479.196	4891.424
SGU-MW03	1295585.66	3128372.492	4891.715
Powell #1 Wellhead			
PL1-MW01	1296724.257	3128378.096	4885.9
PL1-MW02	1296868.792	3128401.74	4885.58
PL1-MW03	1296866.101	3128285.97	4887.257
Evans #6 Wellhead			
E6W-MW01	1298491.853	3128823.155	4882.374
E6W-MW02	1298327.526	3128775.744	4882.452
E6W-MW03	1298332.126	3128852.002	4881.528
Evans #6 Tank Battery			
E6T-MW01	1298262.515	3130605.677	4879.083
E6T-MW02	1298111.469	3130653.242	4877.682
E6T-MW03	1298106.238	3130504.621	4878.033
Longmont #8-10K Wellhead			
LG8-MW01	1297869.036	3133247.015	4868.795
LG8-MW02	1298137.415	3133262.108	4869.031
LG8-MW03	1298043.41	3133086.449	4869.106
Domenico #1 Wellsite			
DM1-MW01	1300190.038	3137726.724	4857.637
DM1-MW02	1300410.879	3137620.947	4854.174
DM1-MW03	1300418.347	3137889.21	4855.269
Stamp 31-2C Wellsite			
S31-MW01	Wells were not surveyed as part of this project.		4957.15
S31-MW02			4958.62
S31-MW04			4957.11

*All survey information is in Datum: NAD 83, Colorado North Zone NAVD 88.
Elevation is measured in feet above mean sea level

Table 2 - Groundwater Elevation Data
City of Longmont - Groundwater Quality Monitoring
Project Number 25127127

Well ID	Elevation	Date Measured	Dept to Groundwater	Groundwater Elevation
Sherwood #1 Wellhead				
SH1-MW01	4902.753	3/18/2013	8.49	4894.263
SH1-MW02	4900.992	3/18/2013	7.41	4893.582
SH1-MW03	4901.797	3/18/2013	7.64	4894.157
Sherwood #2 Wellhead				
SH2-MW01	4896.755	3/18/2013	5.2	4891.555
SH2-MW02	4896.147	3/18/2013	5.71	4890.437
SH2-MW03	4896.32	3/18/2013	5.11	4891.21
City of Longmont #1 Wellhead				
CL1-MW01	4896.992	3/20/2013	6.42	4890.572
CL1-MW02	4896.044	3/20/2013	5.75	4890.294
CL1-MW03	4896.328	3/20/2013	5.86	4890.468
Serafini Gas Unit				
SGU-MW01	4892.365	3/20/2013	5.52	4886.845
SGU-MW02	4891.424	3/21/2013	5.17	4886.254
SGU-MW03	4891.715	3/21/2013	5.59	4886.125
Powell #1 Wellhead				
PL1-MW01	4885.9	3/20/2013	11.91	4873.99
PL1-MW02	4885.58	3/19/2013	12	4873.58
PL1-MW03	4887.257	3/19/2013	13.04	4874.217
Evans #6 Wellhead				
E6W-MW01	4882.374	3/22/2013	4.5	4877.874
E6W-MW02	4882.452	3/22/2013	5.19	4877.262
E6W-MW03	4881.528	3/22/2013	4.41	4877.118
Evans #6 Tank Battery				
E6T-MW01	4879.083	3/22/2013	8.01	4871.073
E6T-MW02	4877.682	3/22/2013	6.4	4871.282
E6T-MW03	4878.033	3/22/2013	6.61	4871.423
Longmont #8-10K Wellhead				
LG8-MW01	4868.795	3/22/2013	3.64	4865.155
LG8-MW02	4869.031	3/22/2013	4.32	4864.711
LG8-MW03	4869.106	3/22/2013	3.21	4865.896
Domenico #1 Wellsite				
DM1-MW01	4857.637	3/19/2013	7.41	4850.227
DM1-MW02	4854.174	3/19/2013	3.97	4850.204
DM1-MW03	4855.269	3/19/2013	5.15	4850.119
Stamp 31-2C Wellsite				
S31-MW01	4957.15	3/22/2013	6	4951.15
S31-MW02	4958.62	3/22/2013	8.55	4950.07
S31-MW04	4957.11	3/22/2013	9.22	4947.89

*All survey information is in Datum: NAD 83, Colorado North Zone NAVD 88
Elevation is measured in feet above mean sea level

Table 3 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25127127

CAS #	Parameters	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Sherwood #1 Wellhead			Sherwood #2 Wellhead			City of Longmont #1 Wellhead		
				Sample ID	SH1-MW1-130318	SH1-MW2-130318	SH1-MW3-130318	SH2-MW1-130318	SH2-MW2-130318	SH2-MW3-130318	CL1-MW1-130320	CL1-MW2-130320	CL1-MW3-130321
				Date	03/18/2013	03/18/2013	03/18/2013	03/18/2013	03/18/2013	03/18/2013	03/20/2013	03/20/2013	03/21/2013
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)	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	Xylene (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)
Semivolatile Organic Compounds													
83-32-9	Acenaphthene	---	0.42	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
208-96-8	Acenaphthylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
120-12-7	Anthracene	---	2.1	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
56-55-3	Benzo(a)anthracene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
50-32-8	Benzo(a)pyrene	---	4.8E-6 to 2.0E-4[M]	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
205-99-2	Benzo(b)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
207-08-9	Benzo(k)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
191-24-2	Benzo(g,h,i)perylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
218-01-9	Chrysene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
53-70-3	Dibenzo(a,h)anthracene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
206-44-0	Fluoranthene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
86-73-7	Fluorene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
193-39-5	Indeno(1,2,3-cd)pyrene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
91-20-3	Naphthalene	---	0.14	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
85-01-8	Phenanthrene	---	---	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
129-00-0	Pyrene	---	0.21	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Other Organic Compounds													
74-82-8	Methane	---	---	mg/L	ND (0.0066)	**0.0091**	ND (0.0066)	ND (0.0066)	ND (0.0066)	ND (0.0066)	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)	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	**92.1**	**101**	**92.8**	**189**	**225**	**220**	**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)	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**	**99.7**	**107**	**121**	**121**	**115**	**72.2**	**67.4**	**75.1**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**2.57**	**3.06**	**2.26**	**3.86**	**5.72**	**4.69**	**2.83**	**2.1**	**2.83**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**118**	**117**	**115**	**102**	**111**	**104**	**61.7**	**60.4**	**63.6**
7440-24-6	Strontium	---	---	mg/L	**5.91**	**3.47**	**2.83**	**3.44**	**3.87**	**4.52**	**2.38**	**4.26**	**3.45**
	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	**345**	**365**	**349**	**345**	**315**	**324**	**377**	**354**	**389**
	Alkalinity, Total as CaCO3	---	---	mg/L	**345**	**365**	**349**	**345**	**315**	**324**	**377**	**354**	**389**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)	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	**37.5**	**37.5**	**36.6**	**40.2**	**43.8**	**44.8**	**34.1**	**32.7**	**35.3**
	Nitrogen as Nitrate	---	10	mg/L	**8.3**	**7.9**	**5.7**	**11.4**	**13.6**	**13**	**13.9**	**2.6**	**14.8**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.50)	ND (0.50)	ND (0.50)	**0.63**	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.20)	ND (0.50)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**8.4**	**8**	**5.8**	**12**	**13.8**	**13.1**	**13.9**	**2.6**	**14.9**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**486**	**431**	**452**	**799**	**824**	**847**	**182**	**171**	**189**
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)	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters													
	Specific Conductance	---	---	umhos/cm	**1590**	**1570**	**1600**	**1940**	**2060**	**2080**	**1160**	**1090**	**1130**
	pH at 25 Degrees C	---	6.5 - 8.5	Std. Units	**7.6**	**7.5**	**7.6**	**7.5**	**7.4**	**7.4**	**7.9**	**7.9**	**7.7**

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
Shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminent level

Table 3 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25127127

CAS #	Parameters	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Serafini Gas Unit			Powell #1 Wellhead			Evans #6 Wellhead		
				Sample ID	SGU-MW1-130320	SGU-MW2-130321	SGU-MW3-130321	PL1-MW1-130320	PL1-MW2-130319	PL1-MW3-130319	E6W-MW01-130322	E6W-MW02-130322	E6W-MW03-130322
				Date	03/20/2013	03/21/2013	03/21/2013	03/20/2013	03/19/2013	03/19/2013	03/22/2013	03/22/2013	03/22/2013
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)	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	Xylene (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)
Semivolatile Organic Compounds													
83-32-9	Acenaphthene	---	0.42	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
208-96-8	Acenaphthylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
120-12-7	Anthracene	---	2.1	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
56-55-3	Benzo(a)anthracene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
50-32-8	Benzo(a)pyrene	---	4.8E-6 to 2.0E-4[M]	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
205-99-2	Benzo(b)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
207-08-9	Benzo(k)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
191-24-2	Benzo(g,h,i)perylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
218-01-9	Chrysene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
53-70-3	Dibenzo(a,h)anthracene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
206-44-0	Fluoranthene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
86-73-7	Fluorene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
193-39-5	Indeno(1,2,3-cd)pyrene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
91-20-3	Naphthalene	---	0.14	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
85-01-8	Phenanthrene	---	---	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
129-00-0	Pyrene	---	0.21	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Other Organic Compounds													
74-82-8	Methane	---	---	mg/L	ND (0.0066)	**0.0087**	ND (0.0066)	ND (0.0066)	ND (0.0066)	ND (0.0066)	ND (0.0066)	**0.0278**	**0.0141**
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	**81.4**	**92.6**	**88.2**	**95.3**	**106**	**86**	**183**	**207**	**192**
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	**53.7**	**57.8**	**49**	**73.2**	**75.9**	**63**	**126**	**175**	**150**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**3.59**	**3.39**	**3.94**	**2.28**	**2.33**	**3.02**	**6.52**	**10.6**	**9.22**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**67.2**	**78.6**	**47.7**	**65.3**	**115**	**58.6**	**157**	**212**	**184**
7440-24-6	Strontium	---	---	mg/L	**2.96**	**1.72**	**4.07**	**1.82**	**1.83**	**1.9**	**4.04**	**5.94**	**5.73**
	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	**328**	**359**	**632**	**295**	**311**	**296**	**307**	**312**	**312**
	Alkalinity, Total as CaCO3	---	---	mg/L	**328**	**359**	**632**	**295**	**311**	**296**	**307**	**321**	**312**
24959-67-9	Bromide	---	---	mg/L	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	**1.5**	ND (1.0)
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**29.8**	**34.2**	**28.3**	**31.8**	**32.8**	**32.3**	**32.7**	**34.4**	**31.1**
	Nitrogen as Nitrate	---	10	mg/L	**5.9**	**7.2**	**4.4**	**5.9**	ND (0.10)	**0.58**	**0.44**	ND (0.10)	**0.11**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.20)	ND (0.20)	ND (0.10)	ND (0.20)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**5.9**	**7.3**	**4.4**	**5.9**	ND (0.10)	**0.57**	**0.44**	ND (0.10)	**0.12**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**191**	**228**	**152**	**369**	**484**	**265**	**987**	**1380**	**1130**
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)	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters													
	Specific Conductance	---	---	umhos/cm	**1060**	**1100**	**917**	**1280**	**1480**	**1090**	**2070**	**2200**	**2280**
	pH at 25 Degrees C	---	6.5 - 8.5	Std. Units	**7.8**	**7.9**	**7.6**	**7.9**	**7.4**	**7.4**	**7.6**	**7.8**	**7.6**

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
Shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminent level

Table 3 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25127127

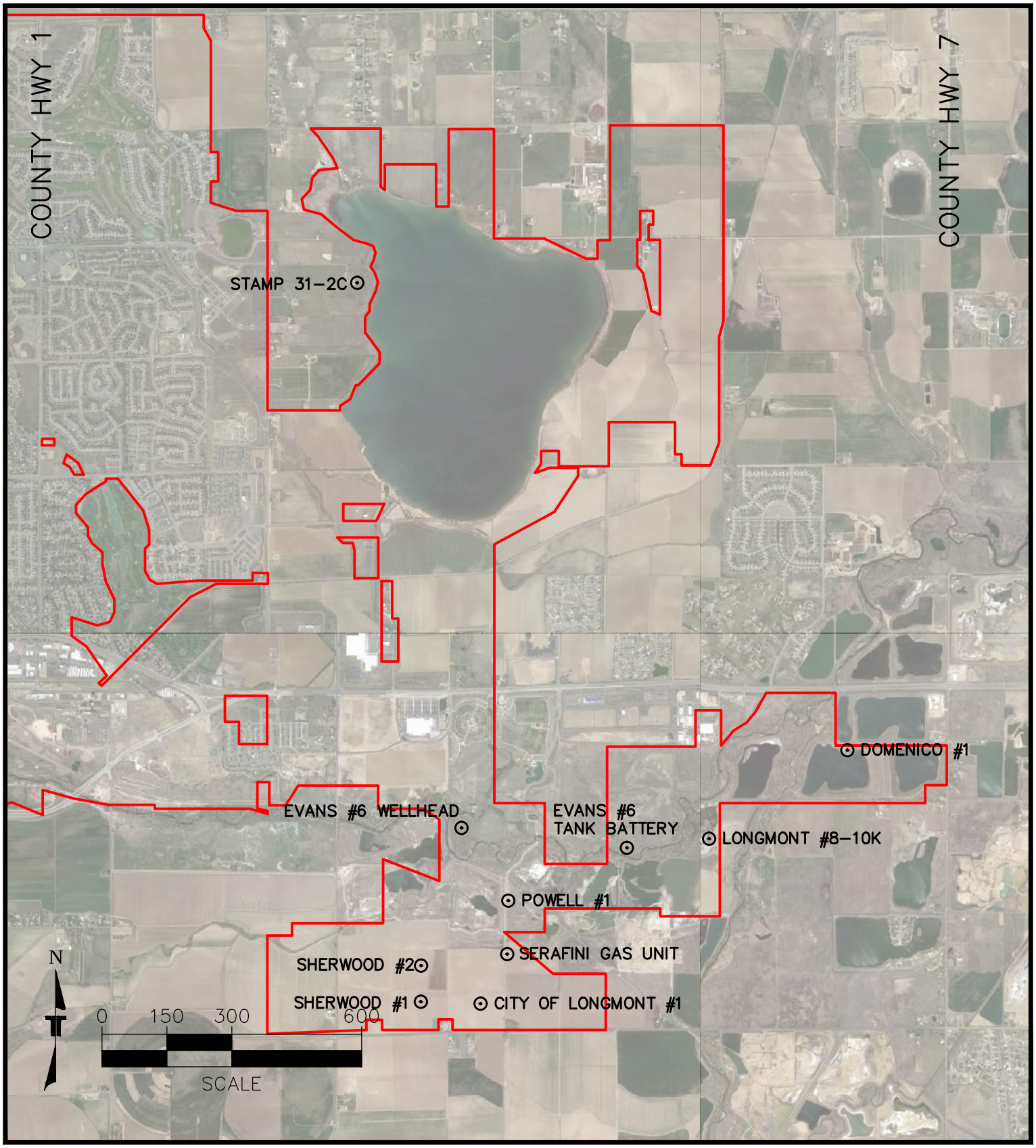
CAS #	Parameters	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Evans #6 Tank Battery			Longmont 8-10K Wellhead			Domenico #1 Wellsite		
				Sample ID	E6T-MW01-130322	E6T-MW02-130322	E6T-MW03-130322	LG8-MW01-130322	LG8-MW02-130322	LG8-MW03-130322	DM1-MW1-130319	DM1-MW2-130319	DM1-MW3-130319
				Date	03/22/2013	03/22/2013	03/22/2013	03/22/2013	03/22/2013	03/22/2013	03/19/2013	03/19/2013	03/19/2013
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)	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	Xylene (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)
Semivolatile Organic Compounds													
83-32-9	Acenaphthene	---	0.42	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
208-96-8	Acenaphthylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
120-12-7	Anthracene	---	2.1	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	**0.00011**
56-55-3	Benzo(a)anthracene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
50-32-8	Benzo(a)pyrene	---	4.8E-6 to 2.0E-4[M]	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
205-99-2	Benzo(b)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
207-08-9	Benzo(k)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
191-24-2	Benzo(g,h,i)perylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
218-01-9	Chrysene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
53-70-3	Dibenzo(a,h)anthracene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
206-44-0	Fluoranthene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	**0.00012**	ND (0.00010)	ND (0.00010)
86-73-7	Fluorene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
193-39-5	Indeno(1,2,3-cd)pyrene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	**0.00042**
91-20-3	Naphthalene	---	0.14	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
85-01-8	Phenanthrene	---	---	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
129-00-0	Pyrene	---	0.21	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Other Organic Compounds													
74-82-8	Methane	---	---	mg/L	ND (0.0066)	**0.0076**	**0.0068**	ND (0.0066)	ND (0.0066)	ND (0.0066)	**0.0253**	**0.0071**	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**	**238**	**354**	**74.5**	**85.1**	**87**	**86**	**57.7**	**99.2**
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)	ND (0.050)	ND (0.050)	ND (0.050)
7439-95-4	Magnesium, Dissolved	---	---	mg/L	**285**	**181**	**350**	**79.1**	**88.6**	**94.1**	**93.1**	**84.8**	**55.1**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**12.1**	**7.41**	**11**	**5.87**	**5.39**	**5.65**	**3.4**	**6.21**	**3.18**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**593**	**247**	**500**	**106**	**131**	**122**	**254**	**214**	**161**
7440-24-6	Strontium	---	---	mg/L	**6.14**	**4.52**	**7.86**	**3.03**	**1.97**	**2.87**	**1.83**	**0.965**	**2.14**
	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**	**346**	**524**	**204**	**234**	**244**	**484**	**307**	**284**
	Alkalinity, Total as CaCO3	---	---	mg/L	**334**	**346**	**524**	**204**	**234**	**244**	**484**	**307**	**284**
24959-67-9	Bromide	---	---	mg/L	**1.2**	**1.2**	**1.3**	ND (1.0)	ND (1.0)	ND (1.0)	**4.8**	**3.4**	**2.2**
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**112**	**63.9**	**103**	**40.1**	**42.9**	**42.1**	**136**	**123**	**91.5**
	Nitrogen as Nitrate	---	10	mg/L	**0.93**	ND (0.10)	ND (0.10)	**0.23**	**0.28**	ND (0.10)	ND (0.10)	ND (0.10)	**0.27**
	Nitrogen as Nitrite	---	1	mg/L	ND (0.10)	ND (0.10)	ND (0.10)	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	**0.93**	ND (0.10)	ND (0.10)	**0.24**	**0.29**	ND (0.10)	ND (0.10)	ND (0.10)	**0.3**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**3060**	**1560**	**2650**	**496**	**548**	**530**	**494**	**492**	**448**
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)	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters													
	Specific Conductance	---	---	umhos/cm	**5030**	**2960**	**4830**	**1350**	**1540**	**1530**	**1970**	**1720**	**1640**
	pH at 25 Degrees C	---	6.5 - 8.5	Std. Units	**7.8**	**7.6**	**7.4**	**7.5**	**7.6**	**7.4**	**7.5**	**7.5**	**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
Shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminent level

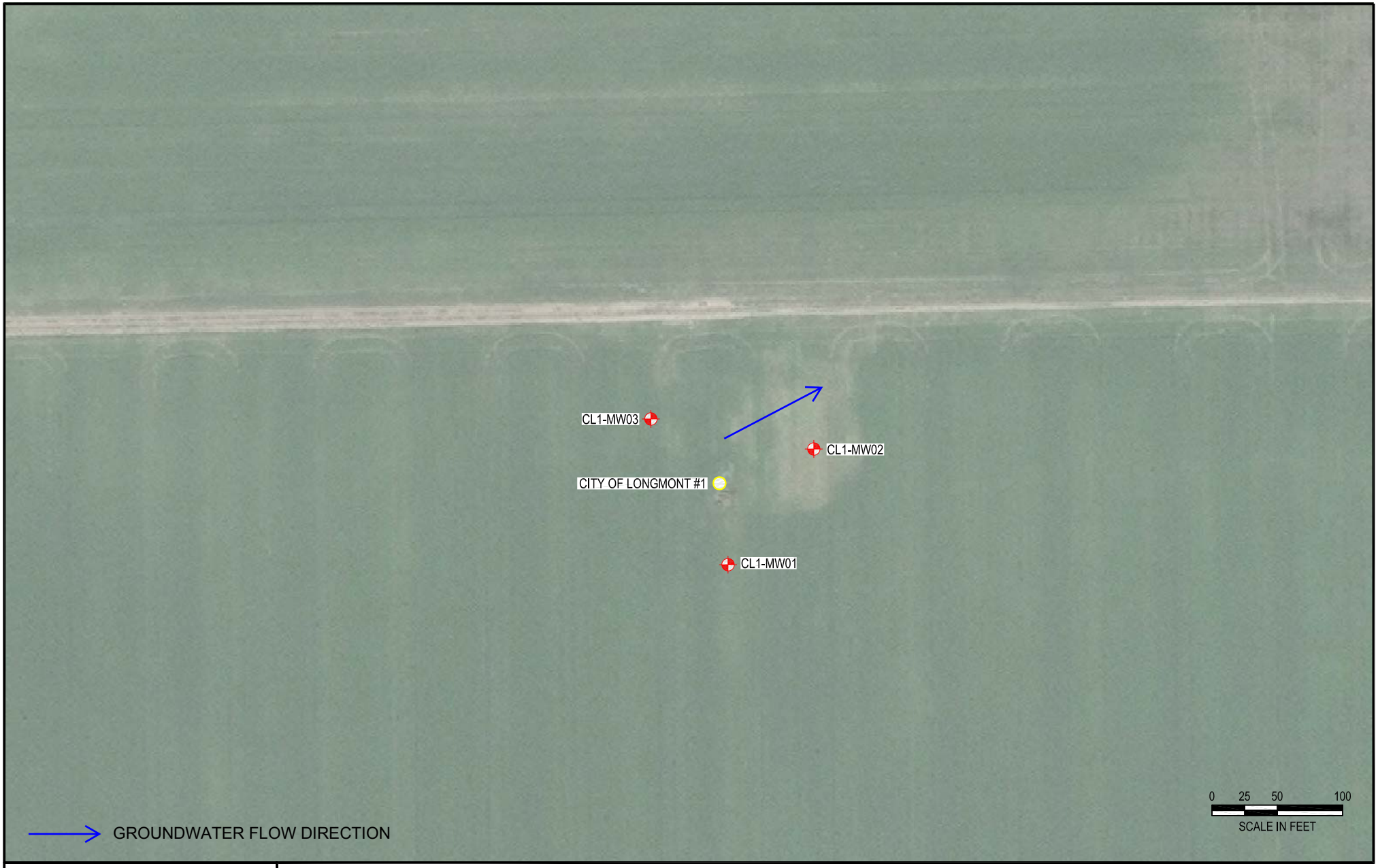
Table 3 - Groundwater Analytical Results
City of Longmont - Groundwater Quality Monitoring
Project Number 25127127

CAS #	Parameters	COGCC Table 910-1	CDPHE Basic Standards for Groundwater	Wellsite	Stamp 31-2C Wellsite		
				Sample ID	S31-MW01-130322	S31-MW02-130322	S31-MW04-130322
				Date	03/22/2013	03/22/2013	03/22/2013
Volatile Organic Compounds							
71-43-2	Benzene	0.005	0.005	mg/L	ND (0.0010)	**0.0946**	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)	**0.0232**	ND (0.0010)
1330-20-7	Xylene (Total)	1.4 to 10	1.4 to 10[M]	mg/L	ND (0.0030)	ND (0.0030)	ND (0.0030)
Semivolatile Organic Compounds							
83-32-9	Acenaphthene	---	0.42	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
208-96-8	Acenaphthylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
120-12-7	Anthracene	---	2.1	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
56-55-3	Benzo(a)anthracene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
50-32-8	Benzo(a)pyrene	---	4.8E-6 to 2.0E-4[M]	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
205-99-2	Benzo(b)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
207-08-9	Benzo(k)fluoranthene	---	4.8E-6	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
191-24-2	Benzo(g,h,i)perylene	---	---	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
218-01-9	Chrysene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
53-70-3	Dibenzo(a,h)anthracene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
206-44-0	Fluoranthene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
86-73-7	Fluorene	---	0.28	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
193-39-5	Indeno(1,2,3-cd)pyrene	---	4.80E-06	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
91-20-3	Naphthalene	---	0.14	mg/L	ND (0.00050)	**0.00056**	ND (0.00050)
85-01-8	Phenanthrene	---	---	mg/L	ND (0.00050)	ND (0.00050)	ND (0.00050)
129-00-0	Pyrene	---	0.21	mg/L	ND (0.00010)	ND (0.00010)	ND (0.00010)
Other Organic Compounds							
74-82-8	Methane	---	---	mg/L	**0.0137**	**0.0323**	ND (0.0066)
74-84-0	Ethane	---	---	mg/L	ND (0.0062)	**0.0119**	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	**365**	**377**	**383**
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	**1400**	**872**	**759**
7440-09-7	Potassium, Dissolved	---	---	mg/L	**26.5**	**18.4**	**19.6**
7440-23-5	Sodium, Dissolved	---	---	mg/L	**2850**	**1940**	**1380**
7440-24-6	Strontium	---	---	mg/L	**9.7**	**7.99**	**9.55**
	Alkalinity, Carbonate (CaCO3)	---	---	mg/L	ND (20.0)	ND (20.0)	ND (20.0)
	Alkalinity, Bicarbonate (CaCO3)	---	---	mg/L	**606**	**860**	**480**
	Alkalinity, Total as CaCO3	---	---	mg/L	**606**	**860**	**480**
24959-67-9	Bromide	---	---	mg/L	**1.8**	**1.5**	**4.4**
16887-00-6	Chloride	<1.25 x Bkg	250	mg/L	**381**	**150**	**85.2**
	Nitrogen as Nitrate	---	10	mg/L	**2.8**	ND (0.10)	**1.9**
	Nitrogen as Nitrite	---	1	mg/L	**0.32**	ND (0.10)	**0.21**
	Nitrogen as Nitrate and Nitrite	---	10	mg/L	**3.1**	ND (0.10)	**2.1**
14808-79-8	Sulfate	<1.25 x Bkg	250	mg/L	**13200**	**9110**	**7180**
18496-25-8	Sulfide, Total	---	---	mg/L	ND (0.050)	ND (0.050)	ND (0.050)
General Parameters							
	Specific Conductance	---	---	umhos/cm	**17200**	**12500**	**9980**
	pH at 25 Degrees C	---	6.5 - 8.5	Std. Units	**7.5**	**7.2**	**7.5**

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
Shading indicates constituents detected above their respective standards
umhos/cm - microsiemens per centimeter
M - Drinking water maximum contaminent level



PRJT MNGR: JPA	PROJECT NO: 25127127	Terracon Consulting Engineers & Scientists	WELLSITE LOCATIONS MAP
DRAWN: JPA	SCALE: AS SHOWN	10625 W I-70 FRONTAGE RD N, SUITE 3 WHEAT RIDGE, CO 80033	2013 GROUNDWATER QUALITY MONITORING LONGMONT, CO
CHECKED: JPA	FILE NAME: Figure1.dwg	PH. (303) 423-3300 FAX. (303) 423-3353	Figure No: 1
APPROVED: DFS	DATE: 05.02.13		N:\Projects\2012\25127040\Working Files\Diagrams-Drawings-Figures



MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: CITY OF LONGMONT #1

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

2

MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: DOMENICO #1

GROUNDWATER QUALITY MONITORING
CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.
3

MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

N

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: EVANS #6 WELLHEAD

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

4

MONITORING WELL

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: EVANS #6 TANK BATTERY

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

5

MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: LONGMONT #8-10K

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

6

MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: POWELL #1

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

7

MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: SERAFINI GAS UNIT

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

8

MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, 2011

N

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: SHERWOOD 1

GROUNDWATER QUALITY MONITORING
CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.
9

MONITORING WELL
PRODUCING OIL & GAS WELLHEAD

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, #2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: SHERWOOD #2

GROUNDWATER QUALITY MONITORING
CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.
10

MONITORING WELL

N

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, 2011

Project Mngr:	JPA
Drawn By:	PAI
Checked By:	JPA
Approved By:	DFS

Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127C01
Date:	5/2/13

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

SITE DIAGRAM: STAMP 31-2C

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

11

REV.	DATE	BY	DESCRIPTION

Terracon
Consulting Engineers and Scientists

10825 W I-70 FRONTAGE RD. N, SUITE 3 WHEAT RIDGE, CO 80033
PH. (303) 423-3300 FAX. (303) 423-3353

POTENTIOMETRIC SURFACE MAP: VARIOUS WELLSITES

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

PROJECT MGR:	JPA
DRAWN BY:	DWD
APPVD. BY:	DFS
SCALE:	NOT TO SCALE
DATE:	5/15/13
PROJECT NO.	25217127
FILE NAME:	25217127-1
FIG. No.	12

N:\Projects\2012\25127127\Working Files\Diagrams-Drawings-Figures\CAD\fr Terraserver\25127127-Final.dwg Layout: VICINITY 5/15/2013 12:12 PM

MONITORING WELL

(4951.15) GROUNDWATER ELEVATION, IN FEET AS MEASURED ON: 3/22/2013

— 4950 — GROUNDWATER CONTOUR, IN FEET

→ GROUNDWATER FLOW DIRECTION

IMAGE SOURCE: DIGITAL GLOBE VIA TERRASERVER, 2011

N

Project Mngr:	JPA
Drawn By:	DWD
Checked By:	MJS/MRF
Approved By:	DFS
Project No.	25217127
Scale:	AS-SHOWN
File No.	25217127-FINAL
Date:	5/15/13

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

POTENTIOMETRIC SURFACE MAP: STAMP 31-2C

GROUNDWATER QUALITY MONITORING

CITY OF LONGMONT

LONGMONT, COLORADO

FIG. No.

13

APPENDIX B – Notice of Intents

GWS-51
4/2012

NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

JAN 18 2013
WATER RESOURCES
STATE ENGINEER
COLO

Please type or print legibly in black or blue ink or file online @ dwrpermitsonline@state.co.us
COLORADO DIVISION OF WATER RESOURCES-1313 SHERMAN ST-STE 821-DENVER-CO-80203
PHONE: 303-866-3581---FAX: 303-866-3589 WEB www.water.state.co.us

Well Owner Name(s): City of Longmont
Address: 7 South Sunset Street, Longmont, Colorado 80501
Phone (area code & no.): (303) 774-4691
Landowner's Name: City of Longmont

Please check one and complete as indicated including contact info:

☐ Water Well Driller Licensed in Colorado – Lic. No. _____
☐ Professional Engineer Registered in Colorado – Reg. No. _____
■ Professional Geologist per CRS 34-1-201(3)
☐ Other -anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company: Terracon Consultants
Address: 10625 W. I-70 Frontage Road N, Ste. 3
City, State & Zip: Wheat Ridge, Colorado 80033
Phone: (303) 423-3300 Fax: (303) 423-3353

Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: NE ¼ NW ¼, Section 31
Township 3 ☒N ☐S, Range 68 ☐E ☒W, 6th PM
County: Weld County
Subdivision: _____
Lot: _____ Block: _____ Filing Unit: _____
Site/Property Address _____

GPS Location in UTM format (optional):
Set GPS unit to true north, datum NAD83, and use meters for the distance units, ☐ Zone 12 or ☐ Zone 13.
Easting _____ Northing _____

# of Monitoring Hole(s) to be constructed: 3
Estimated Depth 15 Ft., Aquifer First Encountered
Purpose of Monitoring Hole(s) Groundwater Quality Monitoring
Anticipated Date of Construction (mm/dd/yyyy) 01/28/2013
Date Notice Submitted (mm/dd/yyyy): 01/21/2013
(Must be at least 3 days prior to construction)

ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE
FOR OFFICE USE ONLY

051223 - MH PROCESSED BY Shannon Shaw

DIV. 1 WD 5 BAS _____ MD _____ DATE ACKNOWLEDGED 01-22-13

CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT

A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE.

1) **Notice was provided to the State Engineer at least 3 days prior to construction of monitoring & observation hole(s).**
2) **Construction of the hole(s) must be completed within 90 days of the date notice was given to the State Engineer.** Testing and/or pumping shall not exceed a total of 200 hours unless prior written approval is obtained from the State Engineer. Water diverted during testing shall not be used for beneficial purposes. The owner of the hole(s) is responsible for obtaining permit(s) and complying with all rules and regulations pertaining to the discharge of fluids produced during testing.
3) **All work must comply with the Water Well Construction Rules, 2 CCR 402-2.** Minimum construction standards must be met or a variance obtained. Standard permit application and work report forms, including **online filing instructions**, are found on the DWR website at http://www.water.state.co.us. **Well Construction and Test Reports (GWS-31)** must be completed for each hole drilled. The licensed contractor or authorized individual must submit the completed forms to this office within 60 days of monitoring hole completion
4) **Unless a well permit is obtained, the hole(s) must be plugged and sealed within one (1) year after construction. An Abandonment Report (form GWS-9) must be submitted within 60 days of plugging & sealing.** The above MH acknowledgement number, owner's structure name, and owner's name and address must be provided on all well permit application(s), well construction and abandonment reports
5) **The owner of the hole(s) shall maintain records of water quality testing and submit this data to the State Engineer upon request**
6) **A MONITORING HOLE CANNOT BE CONVERTED TO A PRODUCTION WATER WELL, except for purposes of remediation (recovery) or as a permanent dewatering system, if constructed in accordance with the Water Well Construction Rules and policies of the State Engineer.**
7) IF HOLES WILL NOT BE CONSTRUCTED UNDER THIS NOTICE WITHIN 90 DAYS, PLEASE WRITE, "NO HOLES CONSTRUCTED" ON A COPY OF THE ACKNOWLEDGED NOTICE WITH THE FILE NUMBER AND FAX THE COPY TO THE DIVISION OF WATER RESOURCES.

THIS ACKNOWLEDGEMENT OF NOTICE DOES NOT INDICATE THAT WELL PERMIT(S) CAN BE APPROVED.

(Use above space for labels or additional conditions as needed)

RECEIVED
JAN 18 2013
DIV. OF WATER RESOURCES
STATE ENGINEER
COLO

GWS-51
4/2012

NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

Please type or print legibly in black or blue ink or file online @ dwrpermitsonline@state.co.us

COLORADO DIVISION OF WATER RESOURCES-1313 SHERMAN ST-STE 821-DENVER-CO-80203
PHONE 303-866-3581—FAX 303-866-3589 WEB: www.water.state.co.us

Well Owner Name(s): City of Longmont
Address : 7 South Sunset Street, Longmont, Colorado 80501
Phone (area code & no.): (303) 774-4691
Landowner's Name: City of Longmont

Please check one and complete as indicated including contact info:

☐ Water Well Driller Licensed in Colorado – Lic. No _____
☐ Professional Engineer Registered in Colorado – Reg. No. _____
■ Professional Geologist per CRS 34-1-201(3)
☐ Other -anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company Terracon Consultants
Address 10625 W. I-70 Frontage Road N, Ste. 3
City, State & Zip Wheat Ridge, Colorado 80033
Phone (303) 423-3300 Fax (303) 423-3353

Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: SE ¼ NW ¼, Section 18
Township 2 ☒N ☐S. Range 68 ☐E ☒W, 6th PM
County Weld County
Subdivision: _____
Lot: _____ Block: _____ Filing Unit: _____
Site/Property Address _____

GPS Location in UTM format (optional):
Set GPS unit to true north, datum NAD83, and use meters for the distance units. ☐ Zone 12 or ☐ Zone 13
Easting _____ Northing _____

# of Monitoring Hole(s) to be constructed: 3
Estimated Depth 15 Ft., Aquifer First Encountered
Purpose of Monitoring Hole(s) Groundwater Quality Monitoring

Anticipated Date of Construction (mm/dd/yyyy) 01/28/2013

Date Notice Submitted (mm/dd/yyyy): 01/21/2013
(Must be at least 3 days prior to construction)

ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE
FOR OFFICE USE ONLY

051224 - MH PROCESSED BY [signature]

Div. 1 WD 5 BAS _____ MD _____ DATE ACKNOWLEDGED 01-22-13

CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT

A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE.

1) Notice was provided to the State Engineer at least 3 days prior to construction of monitoring & observation hole(s).
2) Construction of the hole(s) must be completed within 90 days of the date notice was given to the State Engineer. Testing and/or pumping shall not exceed a total of 200 hours unless prior written approval is obtained from the State Engineer. Water diverted during testing shall not be used for beneficial purposes. The owner of the hole(s) is responsible for obtaining permit(s) and complying with all rules and regulations pertaining to the discharge of fluids produced during testing.
3) All work must comply with the Water Well Construction Rules, 2 CCR 402-2. Minimum construction standards must be met or a variance obtained. Standard permit application and work report forms, including online filing instructions, are found on the DWR website at http://www.water.state.co.us. Well Construction and Test Reports (GWS-31) must be completed for each hole drilled. The licensed contractor or authorized individual must submit the completed forms to this office within 60 days of monitoring hole completion.
4) Unless a well permit is obtained, the hole(s) must be plugged and sealed within one (1) year after construction. An Abandonment Report (form GWS-9) must be submitted within 60 days of plugging & sealing. The above MH acknowledgement number, owner's structure name, and owner's name and address must be provided on all well permit application(s), well construction and abandonment reports.
5) The owner of the hole(s) shall maintain records of water quality testing and submit this data to the State Engineer upon request.
6) A MONITORING HOLE CANNOT BE CONVERTED TO A PRODUCTION WATER WELL, except for purposes of remediation (recovery) or as a permanent dewatering system, if constructed in accordance with the Water Well Construction Rules and policies of the State Engineer.
7) IF HOLES WILL NOT BE CONSTRUCTED UNDER THIS NOTICE WITHIN 90 DAYS, PLEASE WRITE, "NO HOLES CONSTRUCTED" ON A COPY OF THE ACKNOWLEDGED NOTICE WITH THE FILE NUMBER AND FAX THE COPY TO THE DIVISION OF WATER RESOURCES.

THIS ACKNOWLEDGEMENT OF NOTICE DOES NOT INDICATE THAT WELL PERMIT(S) CAN BE APPROVED.

(Use above space for labels or additional conditions as needed)

GWS-51
4/2012

NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

JAN 18 2013

Please type or print legibly in black or blue ink or file online @ dwrpermitsonline@state.co.us
COLORADO DIVISION OF WATER RESOURCES-1313 SHERMAN ST-STE 821-DENVER-CO-80203
PHONE 303-866-3581---FAX 303-866-3589 WEB www.water.state.co.us

WATER RESOURCES STATE ENGINEER COLO

Well Owner Name(s): City of Longmont
Address : 7 South Sunset Street, Longmont, Colorado 80501
Phone (area code & no.): (303) 774-4691
Landowner's Name: City of Longmont

Please check one and complete as indicated including contact info:

☐ Water Well Driller Licensed in Colorado – Lic. No. _____
☐ Professional Engineer Registered in Colorado – Reg. No. _____
■ Professional Geologist per CRS 34-1-201(3)
☐ Other –anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company Terracon Consultants
Address 10625 W. I-70 Frontage Road N, Ste. 3
City, State & Zip Wheat Ridge, Colorado 80033
Phone (303) 423-3300 Fax (303) 423-3353

Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: NE ¼ NW ¼, Section 18
Township 2 ☒N ☐S, Range 68 ☐E ☒W, 6th PM
County Weld County
Subdivision. _____
Lot. _____ Block _____ Filing Unit _____
Site/Property Address _____

GPS Location in UTM format (optional):
Set GPS unit to true north, datum NAD83, and use meters for the distance units. ☐ Zone 12 or ☐ Zone 13.
Easting _____ Northing _____

# of Monitoring Hole(s) to be constructed: 3
Estimated Depth 15 Ft., Aquifer First Encountered
Purpose of Monitoring Hole(s) Groundwater Quality Monitoring

Anticipated Date of Construction (mm/dd/yyyy) 01/28/2013

Date Notice Submitted (mm/dd/yyyy): 01/21/2013
(Must be at least 3 days prior to construction)

ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE
FOR OFFICE USE ONLY

051225 - MH PROCESSED BY Shannon Johnson

Div. 1 WD 5 BAS _____ MD _____ DATE ACKNOWLEDGED 01-22-13

CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT

A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE.

1) Notice was provided to the State Engineer at least 3 days prior to construction of monitoring & observation hole(s).
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3) All work must comply with the Water Well Construction Rules, 2 CCR 402-2. Minimum construction standards must be met or a variance obtained. Standard permit application and work report forms, including online filing instructions, are found on the DWR website at http://www.water.state.co.us. Well Construction and Test Reports (GWS-31) must be completed for each hole drilled. The licensed contractor or authorized individual must submit the completed forms to this office within 60 days of monitoring hole completion.
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6) A MONITORING HOLE CANNOT BE CONVERTED TO A PRODUCTION WATER WELL, except for purposes of remediation (recovery) or as a permanent dewatering system, if constructed in accordance with the Water Well Construction Rules and policies of the State Engineer.
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THIS ACKNOWLEDGEMENT OF NOTICE DOES NOT INDICATE THAT WELL PERMIT(S) CAN BE APPROVED.

(Use above space for labels or additional conditions as needed)

GWS-51
4/2012

NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

JAN 18 2013
DIV. OF WATER RESOURCES
STATE ENGINEER
COLO

Please type or print legibly in black or blue ink or file online @ dwrpermitsonline@state.co.us
COLORADO DIVISION OF WATER RESOURCES-1313 SHERMAN ST-STE 821-DENVER-CO-80203
PHONE: 303-866-3581--FAX: 303-866-3589 WEB: www.water.state.co.us

Well Owner Name(s): City of Longmont
Address: 7 South Sunset Street, Longmont, Colorado 80501
Phone (area code & no.): (303) 774-4691
Landowner's Name: City of Longmont

Please check one and complete as indicated including contact info:

☐ Water Well Driller Licensed in Colorado – Lic. No. _____
☐ Professional Engineer Registered in Colorado – Reg No _____
■ Professional Geologist per CRS 34-1-201(3)
☐ Other -anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company Terracon Consultants
Address 10625 W. I-70 Frontage Road N, Ste. 3
City, State & Zip Wheat Ridge, Colorado 80033
Phone (303) 423-3300 Fax (303) 423-3353

Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: NE ¼ NE ¼, Section 18
Township 2 ☒N ☐S, Range 68 ☐E ☒W, 6th PM
County Weld County
Subdivision _____
Lot: _____ Block _____ Filing Unit: _____
Site/Property Address _____

GPS Location in UTM format (optional):
Set GPS unit to true north, datum NAD83, and use meters for the distance units, ☐ Zone 12 or ☐ Zone 13.
Easting _____ Northing _____

# of Monitoring Hole(s) to be constructed: 3
Estimated Depth 15 Ft., Aquifer First Encountered
Purpose of Monitoring Hole(s) Groundwater Quality Monitoring

Anticipated Date of Construction (mm/dd/yyyy) 01/28/2013

Date Notice Submitted (mm/dd/yyyy): 01/21/2013
(Must be at least 3 days prior to construction)

ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE
FOR OFFICE USE ONLY

051226 - MH PROCESSED BY Shannon Johnson

DIV. 1 WD 5 BAS _____ MD _____ DATE ACKNOWLEDGED 01-22-13

CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT

A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE.

1) **Notice was provided to the State Engineer at least 3 days prior to construction of monitoring & observation hole(s).**
2) **Construction of the hole(s) must be completed within 90 days of the date notice was given to the State Engineer.** Testing and/or pumping shall not exceed a total of 200 hours unless prior written approval is obtained from the State Engineer. Water diverted during testing shall not be used for beneficial purposes. The owner of the hole(s) is responsible for obtaining permit(s) and complying with all rules and regulations pertaining to the discharge of fluids produced during testing
3) **All work must comply with the Water Well Construction Rules, 2 CCR 402-2** Minimum construction standards must be met or a variance obtained. Standard permit application and work report forms, including online filing instructions, are found on the DWR website at http://www.water.state.co.us. **Well Construction and Test Reports (GWS-31)** must be completed for each hole drilled. The licensed contractor or authorized individual must submit the completed forms to this office within 60 days of monitoring hole completion.
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(Use above space for labels or additional conditions as needed)

GWS-51
4/2012

NOTICE OF INTENT TO CONSTRUCT MONITORING HOLE(S)

Please type or print legibly in black or blue ink or file online @ dwrpermitsonline@state.co.us
COLORADO DIVISION OF WATER RESOURCES-1313 SHERMAN ST-STE 821-DENVER-CO-80203
PHONE: 303-866-3581--FAX: 303-866-3589 WEB: www.water.state.co.us

RECEIVED
JAN 18 2013
WATER RESOURCES
STATE ENGINEER
COLO

Well Owner Name(s): City of Longmont
Address: 7 South Sunset Street, Longmont, Colorado 80501
Phone (area code & no.): (303) 774-4691
Landowner's Name: City of Longmont

Please check one and complete as indicated including contact info:

☐ Water Well Driller Licensed in Colorado – Lic. No
☐ Professional Engineer Registered in Colorado – Reg. No.
■ Professional Geologist per CRS 34-1-201(3)
☐ Other -anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company Terracon Consultants
Address 10625 W. I-70 Frontage Road N, Ste. 3
City, State & Zip Wheat Ridge, Colorado 80033
Phone (303) 423-3300 Fax (303) 423-3353

Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: SE ¼ SE ¼, Section 7
Township 2 ☒N ☐S, Range 68 ☐E ☒W, 6th PM
County Weld County
Subdivision.
Lot. Block Filing Unit:
Site/Property Address

GPS Location in UTM format (optional):
Set GPS unit to true north, datum NAD83, and use meters for the distance units. ☐ Zone 12 or ☐ Zone 13.
Easting Northing

# of Monitoring Hole(s) to be constructed: 3
Estimated Depth 15 Ft., Aquifer First Encountered
Purpose of Monitoring Hole(s) Groundwater Quality Monitoring
Anticipated Date of Construction (mm/dd/yyyy) 01/28/2013
Date Notice Submitted (mm/dd/yyyy): 01/21/2013
(Must be at least 3 days prior to construction)

ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE
FOR OFFICE USE ONLY

051227 - MH PROCESSED BY [signature]

DIV. 1 WD 5 BAS MD DATE ACKNOWLEDGED 01-22-13

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DIVER RESOURCES
STATE ENGINEER
COLO

GWS-51
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Contact / Company Terracon Consultants
Address 10625 W. I-70 Frontage Road N, Ste. 3
City, State & Zip Wheat Ridge, Colorado 80033
Phone (303) 423-3300 Fax (303) 423-3353

Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: NW ¼ SE ¼, Section 8
Township 2 ☒N ☐S, Range 68 ☐E ☒W, 6th PM
County Weld County
Subdivision: _____
Lot: _____ Block: _____ Filing Unit: _____
Site/Property Address _____

GPS Location in UTM format (optional):
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051228 - MH PROCESSED BY [signature]

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GWS-51
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JAN 18 2013
DIV. OF WATER RESOURCES STATE ENGINEER COLO

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☐ Other -anyone directly employed by or under the supervision of a licensed driller, registered professional engineer or professional geologist

Contact / Company: Terracon Consultants
Address: 10625 W. I-70 Frontage Road N, Ste. 3
City, State & Zip: Wheat Ridge, Colorado 80033
Phone: (303) 423-3300 Fax: (303) 423-3353

Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: NE ¼ SE ¼, Section 7
Township 2 ☒N ☐S, Range 68 ☐E ☒W, 6th PM
County: Weld County
Subdivision: ____
Lot ____ Block: ____ Filing Unit ____
Site/Property Address ____

GPS Location in UTM format (optional):
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Date Notice Submitted (mm/dd/yyyy): 01/21/2013
(Must be at least 3 days prior to construction)

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FOR OFFICE USE ONLY

051229 - MH PROCESSED BY [signature]

DIV. 1 WD 5 BAS ____ MD ____ DATE ACKNOWLEDGED 01-22-13

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JAN 18 2013
WATER RESOURCES STATE ENGINEER COLO

GWS-51
4/2012

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PHONE: 303-866-3581---FAX: 303-866-3589 WEB: www.water.state.co.us

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Phone (area code & no.): (303) 774-4691
Landowner's Name: City of Longmont

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Print Name: Jonathan P. Anstey
Sign or enter full name here: Jonathan P. Anstey

Location: NW ¼ SW ¼, Section 8
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FOR OFFICE USE ONLY

051230 - MH PROCESSED BY [signature]

DIV. 1 WD 5 BAS _____ MD _____ DATE ACKNOWLEDGED 01-22-13

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JAN 18 2013
WATER RESOURCES
STATE ENGINEER
CCLC

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051231 - MH PROCESSED BY [signature]

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FOR OFFICE USE ONLY

051232 - MH PROCESSED BY Shannon Johnson

DIV. 1 WD 5 BAS MD DATE ACKNOWLEDGED 01-22-13

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APPENDIX C – Boring Logs and Well Completion Details

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	DM1-MW01	PROJECT #	Location:	Domenico #1
Monitor Well No.:	DM1-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/8/2013 830		Driller:	Eric Roche
Date Completed:	3/8/2013 920		Helper:	Blake Jones
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow Stem Auger		Total Depth:	15' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~10' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass field					
		0-2' Silt with trace medium Sand; hard, brown, dry, low plasticity.	ML	0.5	50%	4,6,6,9	
	5.0	4' Gravel					
		5-7' Sand with coarse Gravel; fine to coarse, sub-angular, dry well graded, red.	SW	0.0	50%	2,4,6,6	
	10.0						
		10-12' Same as above, wet, brown.	SW	NA	50%	2,4,6,10	
	15.0						

End of boring at 15' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-3' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (3-15' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	DM1-MW02	PROJECT #	Location:	Domenico #1
Monitor Well No.:	DM1-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/8/2013 0930		Driller:	Eric Roche
Date Completed:	3/8/2013 1010		Helper:	Blake Jones
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger, 24" split spoon sampler		Total Depth:	13' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass field					
		0-2' Gravel with Clay; fine to coarse grain, brown, well graded, Sand at 2' bgs.	GC	4.8	75%	4,6,9,10	
		3' Gravel, round Cobbles.					
	5.0						
		5-7' Gravel some coarse Sand; fine to coarse grain, well graded, sub-angular, wet, tan/brown/red.	GW	NA	50%	5,7,8,9	
	10.0						
		10-12' Same as above with cobbles.	GW	NA	NA	NA	

End of boring at 13' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	DM1-MW03	PROJECT #	Location:	Domenico #1
Monitor Well No.:	DM1-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/8/2013 1015		Driller:	Eric Roche
Date Completed:	3/8/2013 1100		Helper:	Blake Jones
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5-6' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass field					
	5.0	0-2' Bedded: hard Silt and well graded fine to coarse Sand; dry, brown/tan.	ML/SW	0.2	75%	0,0,5,10	
	10.0	5-7' Sand; fine to coarse grain, well graded, quartz, tan/brown/red/ clear.	SW	0.0	50%	1,4,10,10	
		7' with coarse Gravel.	GW				
		10-12' Gravel with fine to coarse grained Sand; wet, tan, well graded.	GW	NA	NA	NA	

End of boring at 13' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	PL1-MW01	PROJECT #	Location:	Powell #1
Monitor Well No.:	PL1-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/8/2013 1520		Driller:	Eric Roche
Date Completed:	3/8/2013 1615		Helper:	Blake Jones
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	18' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~13' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Gravel and grass field					
		0-2' Gravel and Sand; fine to coarse grained, dry, well graded, tan.	GW	0.0	50%	4,8,12,16	
	5.0	5-7' Same as above	GW	0.0	25%	12,16,28,30	
	10.0	10-12' Same as above	GW	0.0	10%	12,50/4	
		13' Wet					
	15.0	15-17' Same as above, wet.	GW	0.0	5%	50/4	

End of boring at 18' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-6' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (6-18' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	PL1-MW02	PROJECT #	Location:	Powell #1
Monitor Well No.:	PL1-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/8/2013 1315		Driller:	Eric Roche
Date Completed:	3/8/2013 1410		Helper:	Blake Jones
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	20' bgs
Drilling Company:	DrillPro Services		Depth to Water:	17' bgs

Well Completion	Depth (ft bgs)		Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0		Gravel and grass field					
	5.0	0-2'	Fine to coarse Gravelly Clay; firm, tan, dry, cobbles in auger.	GC	0.0	50%	10,22,50/5	
	10.0	5-7'	Clay; soft, medium plasticity, gray and black, organic odor, trace fine Gravel, moist.	CL	0.0	100%	4,4,6,8	
	15.0	10-12'	Same as above, brown.	CL	0.0	50%	1,1,1,2	
	20.0	15-17'	Same as above, wet	CL	0.0	50%	0,2,3,3	
		20-22'	Sandstone; bluish-gray, medium grain, wet.	SS	NA	0%	50/5	

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-8' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (8-20' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	PL1-MW03	PROJECT #	Location:	Powell #1
Monitor Well No.:	PL1-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/8/2013 1420		Driller:	Eric Roche
Date Completed:	3/8/2013 1515		Helper:	Blake Jones
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	18' bgs
Drilling Company:	DrillPro Services		Depth to Water:	15' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Gravel and grass field					
		0-2' Fine to coarse Gravelly Clay; firm, brown, dry.	GC	0.0	50%	10,12,20,22	
	5.0						
		5-7' Clay; with trace fine Gravel, soft, medium plasticity, black/gray organic matter present, moist.	CL	0.2	75%	5,6,6,8	
		9' Cobbles encountered.					
	10.0						
		10-12' Fine to coarse Gravel and coarse Sand; white, tan, dry, well graded.	GW	0.0	10%	6,17,50/5	
	15.0						
		15-17' Same as above, wet.	GW	0.0	25%	10,50/5	

End of boring at 18' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-6' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (6-18' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SH1-MW01	PROJECT #	Location:	Sherwood #1 Wellsite
Monitor Well No.:	SH1-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/8/2013 1130		Driller:	Blake Jones
Date Completed:	3/8/2013 1230		Helper:	Eric Roche
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	15' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~10' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Exposed agricultural field					
	5.0	0-2' Silty Clay; firm, brown to light brown, dry, trace sand.	ML/CL	0.0	75%	2,5,7,10	
	10.0	5-7' Sandy Clay; fine to coarse grain, soft, medium plasticity, moist, light brown.	SC	0.0	75%	12,13,14,14	
	15.0	10-12' Gravel and Sand; fine to coarse grain, well graded, light brown.	GW	0.0	75%	10,20,21,24	

End of boring at 15' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-3' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (3-15' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SH1-MW02	PROJECT #	Location:	Sherwood #1 Wellsite
Monitor Well No.:	SH1-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/4/2013 0915		Driller:	Eric Roche
Date Completed:	3/4/2013 1015		Helper:	
Type of Drill:	Diedrich D-120		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	15' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~9.5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Agricultural field					
	5.0	0-2' Silt with some Clay; soft to firm, light brown, moist, trace sand.	ML	0.0	100%	NA	
	10.0	5-7' Sandy Clay; fine grain, soft, tan, moist, poorly graded.	SC	0.0	75%	11,21	
	15.0	Encountered cobbles at 9.5' bgs. 10-12' Gravel with Sand; fine to coarse grain, quartz, well graded, wet, tan.	GW	0.0	75%	20,22,26,30	

End of boring at 15' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (1-3' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (3-15' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SH1-MW03	PROJECT #	Location:	Sherwood #1 Wellsite
Monitor Well No.:	SH1-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/4/2013 1100		Driller:	Blake Jones
Date Completed:	3/4/2013 1150		Helper:	Eric Roche
Type of Drill:	Hurricane: truck mounted geoprobe/auger rig		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	15' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~9' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Agricultural field					
	5.0	0-2' Silt and Clay; firm, brown, dry, some trace sand.	ML/CL	0.0	100%	NA	
	10.0	5-7' Sandy Clay; fine to medium grain, soft, moist to wet, medium plasticity, light brown.	SC	0.0	100%	NA	
	15.0	10-12' Gravel with Sand; fine to coarse grain, well graded, light brown, wet at 9'.	GW	0.0	100%	NA	

End of boring at 15' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (1-3' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (3-15' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SH2-MW01	PROJECT #	Location:	Sherwood #2 Wellsite
Monitor Well No.:	SH2-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/7/2013 1600		Driller:	Eric Roche
Date Completed:	3/7/2013 1645		Helper:	Ron Lucero
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	11' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Agricultural field					
		0-2' Sandy Silt; medium grain, soft dry, brown.	ML/SM	0.0	75%	2,4,4,6	
	5.0						
		5-7' Sand some Silt trace medium Gravel; moist, brown, poorly graded.	SP	0.0	75%	2,2,6,12	
	10.0						
		10-12' Same as above; Gravel. Claysone at 12' bgs.	GW	0.0	100%	4,4,16,40	

End of boring at 11' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	8'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-11' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SH2-MW02	PROJECT #	Location:	Sherwood #2 Wellsite
Monitor Well No.:	SH2-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/7/2013 1415		Driller:	Eric Roche
Date Completed:	3/7/2013 1450		Helper:	Ron Lucero
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Agricultural field					
	5.0	0-2' Sandy Silt; moist, fine to coarse grain, well graded, soft, dry, brown.	SM	0.0	75%	2,4,6,6	
	10.0	5-7' Gravel with Sand; fine to coarse grain, well graded, brown, wet.	GW	0.0	50%	16,20,50/4	
			GW				

End of boring at 13' bgs.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SH2-MW03	PROJECT #	Location:	Sherwood #2 Wellsite
Monitor Well No.:	SH2-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/7/2013 1500		Driller:	Eric Roche
Date Completed:	3/7/2013 1545		Helper:	Ron Lucero
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	10' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Agricultural field					
	5.0	0-2' Sandy Silt trace Clay; soft, medium plasticity, fine to coarse grain, brown, dry.	ML	0.0	75%	4,5,6,6	
	10.0	5-7' Gravel with Sand; fine to coarse grain, well graded, brown.	GW	0.0	10%	8,18,50/4	

End of boring at 10' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	7'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-10' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	E6W-MW01	PROJECT #	Location:	Evans #6 Wellhead
Monitor Well No.:	E6W-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/7/2013 1205		Driller:	Eric Roche
Date Completed:	3/7/2013 1300		Helper:	Ron Lucero
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	10' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass field					
	5.0	0-2' Silt; soft, low plasticity, brown, moist.	ML	0.0	75%	4,5,5,6	
	10.0	5-7' Gravel with coarse Sand; fine to coarse grain, wet, tan, well graded.	GW	0.0	75%	8,10,10,12	

End of boring at 10' bgs, auger refusal in Claystone bedrock.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	7'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-10' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	E6W-MW02	PROJECT #	Location:	Evans #6 Wellhead
Monitor Well No.:	E6W-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/7/2013 1120		Driller:	Eric Roche
Date Completed:	3/7/2013 1200		Helper:	Ron Lucero
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~4-5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass field					
		0-2' Silt with trace fine to medium grain Sand; firm, non-plastic, light brown, dry	ML	0.0	75%	4,5,7,8	
		4' Gravel lens.					
	5.0	5-7' Gravel with coarse Sand; fine to coarse grain, well graded,quartz, pink/white/tan, wet.	GW	0.0	75%	10,10,14,16	
	10.0		GW	0.0			
		13' Claystone Bedrock					

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	E6W-MW03	PROJECT #	Location:	Evans #6 Wellhead
Monitor Well No.:	E6W-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/7/2013 1030		Driller:	Eric Roche
Date Completed:	3/7/2013 1115		Helper:	Ron Lucero
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	11.5' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~3-5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass field					
2.5 / 3.5	5.0	0-2' Silt trace fine to medium Sand; firm, light brown, dry, non-plastic.	ML	0.0	75%	5,6,6,10	
	10.0	5-7' Gravel with coarse Sand; fine to coarse grain, quartz, well graded, wet, pink/white/tan.	GW	0.0	75%	6,10,14,16	
11.5		13' Bedrock	GW				

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Granular/Chips (0.5-2.5' bgs)
Annulus Diameter:	8.25"	Screen Length:	8' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2.5-11.5' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	LG8-MW01	PROJECT #	Location:	Longmont 8-10K
Monitor Well No.:	LG8-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/19/13 1315		Driller:	Eric Roche
Date Completed:	3/19/13 1415		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	10' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Gravel					
	5.0	0-2' Clay; soft, brown, dry with some coarse grained sand	CL	0.0	100%	2,2,4,6	
	10.0	5-7' Sand; fine to coarse grained, brown, well graded, wet, with trace gravel	SW	0.0	75%	4,11,16,20	

End of boring at 10' bgs, auger refusal in Claystone bedrock.

Well Diameter:	2"	Plug (Depth/Size):	Crumbs/chips (2'-0.5')
Annulus Diameter:	8.25"	Screen Length:	7' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-10' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	LG8-MW03	PROJECT #	Location:	Longmont 8-10K
Monitor Well No.:	LG8-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/19/13 1115		Driller:	Eric Roche
Date Completed:	3/19/13 1230		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	10' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass					
	5.0	0-2' Silt and Clay; soft, low plasticity, brown, dirty with some sand fine to coarse grained	ML/CL	0.0	25%	0,1,1,2	
	10.0	5-7' Sand; fine to coarse grained, well graded with trace gravel	SW	0.0	100%	4,11,11,16	

End of boring at 10' bgs, auger refusal in Claystone bedrock.

Well Diameter:	2"	Plug (Depth/Size):	Crumbs/chips (2'-0.5')
Annulus Diameter:	8.25"	Screen Length:	7' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-10' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	LG8-MW02	PROJECT #	Location:	Longmont 8-10K
Monitor Well No.:	LG8-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/19/13 1230		Driller:	Eric Roche
Date Completed:	3/19/13 1315		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	10' bgs
Drilling Company:	DrillPro Services		Depth to Water:	~5' bgs

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass					
	5.0	0-2' Silt and Clay; soft, brown, dry with some coarse grained sand	ML/CL	0.0	100%	2,2,3,4	
	10.0	5-7' Sand; fine to coarse grained, well graded with trace gravel, wet, brown	SW	0.0	100%	10,12,14,16	

End of boring at 10' bgs, auger refusal in Claystone bedrock.

Well Diameter:	2"	Plug (Depth/Size):	Crumbs/chips (2'-0.5')		
Annulus Diameter:	8.25"	Screen Length:	7'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-10' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SGU-MW03	PROJECT #	Location:	Serafini gas Unit
Monitor Well No.:	SGU-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/19/13 0940		Driller:	Eric Roche
Date Completed:	3/19/13 1030		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	12'
Drilling Company:	DrillPro Services		Depth to Water:	7'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Dirt field					
2.5	5.0	0-2' Silt; soft, brown, dry with some top soil. Sand increasing with depth	ML	0.0	100%	4,4,6,8	
	10.0	5-7' Gravel and Sand; fine to coarse grained, well graded, brown, wet at 7'	GW	0.0	75%	16,18,18,22	
12		12' Bedrock	GW				

End of boring at 12' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumbs/Chips (0.5-3' bgs)
Annulus Diameter:	8.25"	Screen Length:	8' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2.5-11.5' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SGU-MW01	PROJECT #	Location:	Serafini Gas Unit
Monitor Well No.:	SGU-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/19/13 0800		Driller:	Eric Roche
Date Completed:	3/19/13 0840		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13' bgs
Drilling Company:	DrillPro Services		Depth to Water:	6.5'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Dirt Field					
	5.0	0-2' Silt and Sand; soft, fine to medium grained, well graded, brown, dry, turning to sand by 2'	SM/SW	0.0	100%	2,3,3,4	
	10.0	5-7' Same as above. Turning to fine to coarse grained gravel and fine to coarse grained sand, well graded, wet, brown at 6.5'	GW	0.0	100%	1,2,2,50/3	
	12.5'	Claystone Bedrock	GW				

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumbs/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	SGU-MW02	PROJECT #	Location:	Serafini gas Unit
Monitor Well No.:	SGU-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/19/13 0840		Driller:	Eric Roche
Date Completed:	3/19/13 0940		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	12'
Drilling Company:	DrillPro Services		Depth to Water:	6.5'-7'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Dirt field					
3'		0-2' Silt; soft, brown, dry with top soil. Sand content increasing with depth	ML	0.0	100%	2,2,4,5	
	5.0	5-7' Gravel and Sand; fine to coarse grained with little soil matrix, brown, wet at 7'	GW	0.0	50%	13,16,50/3	
	10.0						
12		12' Bedrock	SS				

End of boring at 12' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumbs/Chips (0.5-3' bgs)		
Annulus Diameter:	8.25"	Screen Length:	8'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (3'-12' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	CL1-MW01	PROJECT #	Location:	City of Longmont #1
Monitor Well No.:	CL1-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/18/13 1230		Driller:	Eric Roche
Date Completed:	3/18/13 1315		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13'
Drilling Company:	DrillPro Services		Depth to Water:	6.5'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Dirt field					
		0-2' Silt and Sand; soft, fine to medium grained, dry, brown, turning to sand by 2'	SM/SW	0.0	100%	2,2,4,5	
	5.0	5-7' Sand; fine to coarse grained, brown, well graded, wet at 6.5', gravel encountered with auger at 7'	SW	0.0	75%	3,6,6,6	
	10.0	10-12' SAA, bedrock at 12'	SW				

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumb/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	CL1-MW02	PROJECT #	Location:	City of Longmont #1
Monitor Well No.:	CL1-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/18/13 1315		Driller:	Eric Roche
Date Completed:	3/18/13 1400		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13'
Drilling Company:	DrillPro Services		Depth to Water:	7'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Dirt field					
	5.0	0-2' Silt and Sand; soft, fine to medium grained, dry, brown, turning to sand by 2'	ML/SW	0.0	100%	2,2,4,4	
	10.0	5-7' Sand; fine to coarse grained, tan/brown, well graded, wet at 7', gravel encountered with auger at 8'	SW	0.0	75%	2,4,4,6	
		10-12' Same as above, bedrock at 12'	SW	0.0	50%	5,16,22,28	

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumb/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	CL1-MW03	PROJECT #	Location:	City of Longmont #1
Monitor Well No.:	CL1-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/18/13 1400		Driller:	Eric Roche
Date Completed:	3/18/13 1445		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13'
Drilling Company:	DrillPro Services		Depth to Water:	7'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Dirt field					
	5.0	0-2' Silt and Sand; soft, fine to medium grained, dry, brown, turning to sand by 2'	SM/SW	0.0	100%	2,2,3,4	
	10.0	5-7' Sand; fine to coarse grained, brown, well graded	SW	0.0	75%	4,4,6,7	
		10-12' Same as above, wet, bedrock at 12'	SW	0.0	50%	12,12,20,26	

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumb/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	E6T-MW02	PROJECT #	Location:	Evans #6 Tanks
Monitor Well No.:	E6T-MW02	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/18/13 0815		Driller:	Eric Roche
Date Completed:	3/18/13 0915		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	13'
Drilling Company:	DrillPro Services		Depth to Water:	6.5'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass					
	5.0	0-2' Silt; soft, brown with trace medium grained sand, dry, low plasticity	ML	0.0	75%	2,4,6,8	
	10.0	5-7' Same as above, slightly more sand content, wet at 6.5', gravel encountered at 6'	ML/GW	0.0	5%	16,8,4,20	
		10-15' Gravel and Sand; fine to coarse grained, well graded, wet, brown	GW	0.0	50%	50/5	

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumb/Chips (0.5-2' bgs)		
Annulus Diameter:	8.25"	Screen Length:	10'	Screen Size:	0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount		

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	E6T-MW03	PROJECT #	Location:	Evans #6 Tanks
Monitor Well No.:	E6T-MW03	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/18/13 0930		Driller:	Eric Roche
Date Completed:	3/18/13 1030		Helper:	Glen Davidovich
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25"Hollow stem auger		Total Depth:	13'
Drilling Company:	DrillPro Services		Depth to Water:	7'-8'

Well Completion	Depth (ft bgs)	Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0	Grass					
	5.0	0-2' Silt; soft, dry, low plasticity with medium top soil	ML	0.0	75%	2,4,4,6	
	10.0	5-7' SAA, moist, organic odor, turning to fine to coarse grained sand , well graded, wet at 7', auger encountered with gravel at 8'	ML/SW	0.0	100%	3,3,3,3	
		10-12' Gravel with Sand; fine to coarse grained, well graded, wet, brown	GW	0.0	50%	13,20,50/5	

End of boring at 13' bgs, auger refusal.

Well Diameter:	2"	Plug (Depth/Size):	Crumb/Chips (0.5-2' bgs)
Annulus Diameter:	8.25"	Screen Length:	10' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (2-13' bgs)	Completion Type:	Flush Mount

Terracon

BORING LOG AND WELL COMPLETION DETAIL

Soil Boring No.:	E6T-MW01	PROJECT #	Location:	Evans #6 Tank Battery
Monitor Well No.:	E6T-MW01	**25127127**	Geologist:	Mike Skridulis
Date Started:	3/7/13 0845		Driller:	Eric Roche
Date Completed:	3/18/13 1100		Helper:	Ron Lucero
Type of Drill:	Diedrich D-50		PM:	Jonathan Anstey
Bit Size:	8.25" Hollow stem auger		Total Depth:	20'
Drilling Company:	DrillPro Services		Depth to Water:	8.6'

Well Completion	Depth (ft bgs)		Description	USCS Code	PID (ppm)	% Rec	Blows (/6")	Lab Sample Interval
	0.0		Grass					
	5.0	0-2'	Silt; dry, soft, non-plastic, light brown, becoming more compact with depth, top soil, fine to coarse grained	ML	0.0	75%	5,6,6,7	
	10.0	5-7'	Gravel; piece of coarse gravel stuck in tip of spoon, dry	GW	0.0	5%	10,12,10,15	
	15.0	10-12'	Sandstone; blue/gray, fine grained, poorly cemented, no sign of water, drill to 15', bedrock refusal at 20.5'	SS	0.0	25%	10,50/4	
	20.0	17'	Same as above	SS	0	0.1	50/5	

River surface is approximately 6-8' below grade at E6T-MW01. No bedrock visible in river bed.

Auger refusal at 20.5', pull auger to see if well will produce water.

3/18/2013: DTW - 5.6' TD - 20' (silt in bottom)

Well Diameter:	2"	Plug (Depth/Size):	Crumb/Chips (0.5-3' bgs)
Annulus Diameter:	8.25"	Screen Length:	15' Screen Size: 0.010"
Sand Pack (Depth/Size):	10/20 Silica (3'-20' bgs)	Completion Type:	Flush Mount

APPENDIX D – Well Development Forms

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SH1-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	8.49	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	13.96	TOC	NA
Initial water column height (ft):	5.47		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.89
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	8.92

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1245	7.92	-	9.41	790	-	1	-	
1257	7.76	-	9.57	774	-	5	-	
1304	7.67	-	9.7	781	-	10	-	
1311	7.63	-	9.57	773	-	15	-	
4/1/2013								
845	7.7	-	9.33	1070	-	3	-	silty
Comments:	sampled at 1317, resampled 4/1/2013 at 0845.							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SH1-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	7.41	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	13.89	TOC	NA
Initial water column height (ft):	6.48		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.06
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	*Development Volume = Casing Volume x 10*	
				Development Volume (gal):	10.56

Time	pH[3]	Turbidity	Temp.[4]	Conductivity[5]	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1204	7.65	-	8.46	655	-	4	-	Turbid brown
1218	7.67	-	8.52	627	-	10	-	Turbid brown
1226	7.63	-	8.75	658	-	15	-	Turbid brown
4/1/2013								
930	8.12	-	9.21	1186	-	3.5	-	silty
Comments:	sampled at 1242, resampled on 4/1/2013 at 930							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SH1-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	7.64	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	14.06	TOC	NA
Initial water column height (ft):	6.42		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.05
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	10.46

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1105	6.95	-	9.44	711	-	1	-	Very turbid, brown
1118	7.31	-	9.2	684	-	5	-	Very turbid, brown
1126	7.46	-	9.06	697	-	10	-	Very turbid, brown
1135	7.54	-	9.28	709	-	15	-	Very turbid, brown
4/1/2013								
1015	7.34	-	9.46	1101	-	3.5	-	silty
Comments:	sampled at 1317, resampled on 4/1/2013 at 1015.							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SH2-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.2	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	10.61	TOC	NA
Initial water column height (ft):	5.41		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.88
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	8.82

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1355	8.03	-	7.32	769	-	1	-	Turbid
1402	7.67	-	7.03	687	-	5	-	Turbid
1415	7.68	-	7.1	646	-	10	-	Turbid
1421	7.61	-	6.98	638	-	15	-	Turbid
4/1/2013								
1115	7.24	-	8.96	1284	-	2.5	-	silty
Comments:	sampled at 1445, resampled on 4/1/2013 at 1115.							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SH1-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.71	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	9.71	TOC	NA
Initial water column height (ft):	4.00		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.65
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	6.52

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1445	7.72	-	7.43	6.71	-	5	-	Murky/silty
1507	7.53	-	7.17	643	-	10	-	Less silty
1518	7.5	-	7.26	644	-	15	-	Less silty
1528	7.56	-	7.23	619	-	20	-	Less silty
4/1/2013								
1150	7.44	-	9.42	1441	-	3.5	-	silty
Comments:	slow recharging. Sampled at 1535, resampled on 4/1/2013 at 1150.							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SH2-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.11	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	12.37	TOC	NA
Initial water column height (ft):	7.26		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.18
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	11.83

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1542	7.76	-	6.98	609	-	1	-	turbid
1548	7.6	-	7.08	602	-	5	-	-
1600	7.56	-	7.38	613	-	10	-	-
	7.57	-	7.18	613	-	15	-	-
4/1/2013								
1220	7.48	-	9.57	1127	-	2.5	-	silty
Comments:	sampled at 1619, resampled on 4/1/12013 at 1220.							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SGU-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.52	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	12.90	TOC	NA
Initial water column height (ft):	7.38		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.20
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	12.03

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1328	7.62	-	7.34	476	-	5	-	turbid
1334	7.52	-	7.19	453	-	10	-	turbid
1345	7.57	-	7.58	463	-	15	-	turbid
Comments:	sampled at 1355							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SGU-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.17	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	11.64	TOC	NA
Initial water column height (ft):	6.47		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.05
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	10.55

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1016	6.99	-	7.44	457	-	1.5	-	Clear to murky
1113	7.53	-	7.84	407	-	3.5	-	Slightly murky
1122	7.57	-	7.8	422	-	5	-	Slightly murky
1130	7.62	-	7.9	457	-	8	-	Slightly murky

Comments: began purging 3/20/2013, but well ran dry during purging. sampled at 1132 on 3/21/2013.

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	SGU-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.59	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	12.06	TOC	NA
Initial water column height (ft):	6.47		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.05
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	10.55

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1027	7.33	-	7.58	369	-	1.5	-	turbid
1033	7.44	-	7.64	369	-	5	-	turbid
1045	7.53	-	7.82	364	-	10	-	turbid
1055	7.5	-	8	368	-	15	-	turbid

Comments: Began purging on 3/20/2013, but well ran dry. Sampled at 1103 on 3/21/2013

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	CL1-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	6.42	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	13.34	TOC	NA
Initial water column height (ft):	6.92		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.13
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	11.28

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1445	7.72	>100	7.9	441	-	3	-	Turbid, silty
1455	7.68	>100	8.13	449	-	5	-	Turbid, silty
1509	7.65	>100	8.22	467	-	10	-	Turbid, silty
Comments:	sampled at 1519							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	CL1-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.75	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	13.26	TOC	NA
Initial water column height (ft):	7.51		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.22
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	*Development Volume = Casing Volume x 10*	
				Development Volume (gal):	12.24

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1532	7.88	-	7.45	416	-	2	-	turbid
1537	7.77	-	7.51	429	-	5	-	turbid
1545	7.69	-	7.4	427	-	10	-	turbid
1551	7.69	-	7.52	434	-	15	-	turbid
Comments:	sampled at 1600							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	CL1-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.86	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	13.22	TOC	NA
Initial water column height (ft):	7.36		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.20
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	12.00

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1222	7.54	-	8.16	345	-	2.5	-	Soupy, thick, murky
1225	7.56	-	8.26	351	-	5	-	Soupy, thick, murky
1233	7.54	-	7.99	373	-	10	-	Soupy, thick, murky
1245	7.57	-	8.18	384	-	15	-	Soupy, thick, murky
Comments:	start purging at 1215. Sampled at 1257.							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	PL1-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	11.91	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	17.79	TOC	NA
Initial water column height (ft):	5.88		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.96
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	9.58

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1145	7.06	-	10.3	877	-	2	-	turbid
1221	7.09	-	10.48	826	-	5	-	turbid
1238	7.23	-	10.42	832	-	10	-	turbid
1245	7.28	-	10.24	833	-	12.5	-	Somewhat turbid

Comments: 1200 - recalibrated pH on YSI, was drifting acidic. 1227 – well recharging slowly, sampled at 1257

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	PL1-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	12	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	19.65	TOC	NA
Initial water column height (ft):	7.65		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.25
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	12.47

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1415	7.33	-	11.33	880	-	1	-	turbid
1420	7.17	-	11.67	880	-	5	-	turbid
1426	7.17	-	12.03	891	-	10	-	turbid
1436	7.18	-	12.13	883	-	15	-	turbid
Comments:	sampled at 1441							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	PL1-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	13.04	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	18.06	TOC	NA
Initial water column height (ft):	5.02		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.82
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	*Development Volume = Casing Volume x 10*	
				Development Volume (gal):	8.18

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1502	7.64	-	12.07	707	-	1	-	turbid
1511	7.43	-	12.18	628	-	5	-	turbid
1522	7.31	-	12.16	668	-	10	-	turbid
1535	7.36	-	12.23	654	-	15	-	turbid
Comments:	sampled at 1546							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	DM1-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	7.41	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	13.4	TOC	NA
Initial water column height (ft):	5.99		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.98
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	9.76

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1028	7.25	-	9.99	1252	-	1	-	turbid
1044	7.17	-	10.1	1211	-	5	-	turbid
1056	7.28	-	10.15	1174	-	10	-	turbid
1108	7.31	-	10.2	1177	-	15	-	turbid
1117	7.3	-	10.4	1194	-	20	-	turbid
Comments:	sampled at 1124. RSK-175 samples filled underneath water in 5 gallon bucket, but not with pump.							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	DM1-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	3.97	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	12.95	TOC	NA
Initial water column height (ft):	8.98		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.46
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	14.64

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1150	7.24	-	8.72	754	-	1	-	Murky/turbid
1157	7.29	-	8.77	792	-	5	-	Murky/turbid
1205	7.33	-	8.14	781	-	10	-	Murky/turbid
1215	7.33	-	8.2	806	-	15	-	Murky/turbid

Comments: ~6.5' from top of vault to top of casing. Start at 1149. RSK-175 vials filled under water without pump. Sample collected at 1226.

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	DM1-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.15	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	13.05	TOC	NA
Initial water column height (ft):	7.9		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.29
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	12.88

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1250	7.51	-	9.19	736	-	1	-	turbid
1253	7.28	-	9.16	740	-	5	-	turbid
1300	7.19	-	9.15	746	-	10	-	turbid
1305	7.18	-	9.02	754	-	15	-	turbid

Comments: ~0.5 feet from top of vault to top of casing. RSK-175 vials filled under water without pump. Sample collected at 1313.

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	E6T-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	8.01	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	19.64	TOC	NA
Initial water column height (ft):	11.63		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.90
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	18.96

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1052	7.9	-	10.42	3779	-	3	-	-
1057	7.9	-	10.52	3735	-	5	-	-
1103	7.85	-	10.84	3514	-	9	-	-
1108	7.84	-	11.42	3665	-	12	-	-
Comments:	no odor, slight sheen. Sampled at 1115							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	E6T-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	6.40	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	12.84	TOC	NA
Initial water column height (ft):	6.44		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.05
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	10.50

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1140	7.52	-	7.54	1891	-	2	-	-
1148	7.52	-	7.78	1676	-	4	-	-
1201	7.53	-	7.28	2009	-	7	-	-
1203	7.51	-	7.35	1985	-	8	-	-

Comments: slow to recharge. Sampled at 1207

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	E6T-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	6.61	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	12.71	TOC	NA
Initial water column height (ft):	6.1		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.99
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	9.94

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1102	7.57	-	8.35	2205	-	2	-	Gray, silty, turbid
1107	7.32	-	8.53	1966	-	5	-	Gray, silty, turbid
1110	7.32	-	8.41	1777*	-	7	-	Gray, silty, turbid
1120	7.35	-	8.42	2311	-	10	-	Gray, silty, turbid
1131	7.23	-	8.38	2372	-	15	-	Gray, silty, turbid
1139	7.24	-	8.44	2238	-	18	-	Gray, silty, turbid
1142	7.24	-	8.51	2251	-	20	-	Gray, silty, turbid
Comments:	*conductivity readings blinking back and forth between two numbers. Sampled at 1145							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	E6W-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	4.50	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	9.33	TOC	NA
Initial water column height (ft):	4.83		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.79
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	7.87

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
947	7.35	-	7.2	1346	-	1.5	-	Brown, turbid
957	7.34	-	7.19	1443	-	5	-	Brown, turbid
1012	7.37	-	7.16	1452	-	10	-	Brown, turbid
1018	7.34	-	7.19	1461	-	13	-	Brown, turbid
1020	7.36	-	7.21	1459	-	15	-	Brown, turbid
Comments:	start purging at 941. No sheen, no odor, no effervescence. Sampled at 1020							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	E6W-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	5.19	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	11.62	TOC	NA
Initial water column height (ft):	6.43		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.05
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	10.48

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
913	7.01	-	7.28	874	-	1	-	-
920	7.41	-	7.33	802	-	3	-	-
929	7.52	-	7.31	777	-	5	-	-
953	7.64	-	7.48	830	-	8	-	-

Comments: start purging at 904. Very slow to recharge. No odor, no sheen, no effervescence. Sampled at 957

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	E6W-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	4.41	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	10.89	TOC	NA
Initial water column height (ft):	6.48		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.06
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	10.56

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
909	7.42	-	8.05	1548	-	2	-	-
919	7.47	-	7.94	1587	-	4	-	-
927	7.47	-	7.8	1576	-	7	-	-
933	7.48	-	7.8	1539	-	10	-	-

Comments: no odor, no sheen, no effervescence. Sampled at 935

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	LG8-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	3.64	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	9.39	TOC	NA
Initial water column height (ft):	5.75		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.94
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	*Development Volume = Casing Volume x 10*	
				Development Volume (gal):	9.37

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1435	7.6	-	7.08	889	-	3	-	-
1439	7.48	-	7.1	854	-	5	-	-
1444	7.47	-	6.91	851	-	8	-	-
1446	7.46	-	7.02	854	-	10	-	-
Comments:	no sheen, no odor. Sampled at 1446							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	LG8-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	4.32	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	9.74	TOC	NA
Initial water column height (ft):	5.42		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.88
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	8.83

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1434	7.5	-	6.13	1009	-	2	-	-
1442	7.55	-	6.16	995	-	3	-	-
1454	7.58	-	6.18	981	-	5	-	-
1503	7.58	-	5.79	1002	-	6	-	-
Comments:	very slow recovery. sampled at 1505							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	LG8-MW03
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	3.21	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	9.42	TOC	NA
Initial water column height (ft):	6.21		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.01
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	10.12

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1501	7.8	-	7.07	942	-	3	-	-
1504	7.67	-	7.06	932	-	5	-	-
1508	7.48	-	7.05	935	-	10	-	-
Comments:	sampled at 1510							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	S31-MW01
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	6.00	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	14.13	TOC	NA
Initial water column height (ft):	8.13		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	1.33
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	13.25

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1301	7.29	-	8.08	2943	-	3	-	-
1303	7.3	-	8.09	3102	-	5	-	-
Comments:	sampled at 1308							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	S31-MW02
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	8.55	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	14.22	TOC	NA
Initial water column height (ft):	5.67		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.92
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	9.24

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1257	7.17	-	10.49	9113	-	3	-	-
Comments:	odor, no sheen. Sampled at 1300							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

Terracon

Well Development Form

Project Name:	City of Longmont, 1Q13 GW Quality Monitoring	Well No.:	S31-MW04
Method of Development:	Surge and Bail	Date:	3/18/2013
Field Professional:	JFW/SEB	Pump Type:	NA
Reviewed By:	MAS	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	9.22	TOC	NA
Depth to Sediment (ft):	NA	TOC	NA
Total Depth of the Well (ft):	14.90	TOC	NA
Initial water column height (ft):	5.68		
Diameter of the Well (inches):	2		

Volume of Water Conversion				*Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Coversion*	
1" Well:	0.041 gal/ft	4" Well:	0.653 gal/ft	Casing Volume (gal):	0.93
2" Well:	0.163 gal/ft	6" Well:	1.469 gal/ft	***Development Volume = Casing Volume x 10***	
				Development Volume (gal):	9.26

Time	pH(3)	Turbidity	Temp.(4)	Conductivity(5)	Pump Rate	Vol. of Water Removed	Water Level	Physical Characteristics
		NTU	(°C)	(mmhos)	(gpm)	(gal)	(ft)	
1330	7.41	-	10.24	6885	-	2	-	-
1332	7.47	-	10.26	7133	-	3	-	-
1334	7.46	-	10.48	7289	-	4	-	-
1336	7.47	-	10.53	7303	-	5	-	-
Comments:	sampled at 1335							

Development is considered complete when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Three consecutive pH measurements within 20% of each other.
3. Three consecutive tempurature measurements within 1°C of each other.
4. Three consecutive conductivity measurements within 10% of each other.
5. Sediment load has been removed.

NA - not applicable
ft - feet
TOC - top of casing
NTU - nephelometric turbidity units
mmhos - millimhos
gpm - gallons per minute

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

March 28, 2013

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

RE: Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on March 20, 2013. 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

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

CERTIFICATIONS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
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 #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
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Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs
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A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2
Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60140753001	**DM1-MW1-130319**	Water	03/19/13 11:24	03/20/13 08:30
60140753002	**DM1-MW2-130319**	Water	03/19/13 12:26	03/20/13 08:30
60140753003	**DM1-MW3-130319**	Water	03/19/13 13:13	03/20/13 08:30
60140753004	**PL1-MW2-130319**	Water	03/19/13 14:41	03/20/13 08:30
60140753005	**PL1-MW3-130319**	Water	03/19/13 15:46	03/20/13 08:30

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SAMPLE ANALYTE COUNT

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60140753001	**DM1-MW1-130319**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	JML	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140753002	**DM1-MW2-130319**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	JML	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140753003	**DM1-MW3-130319**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	JML	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140753004	**PL1-MW2-130319**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K

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SAMPLE ANALYTE COUNT

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	JML	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140753005	**PL1-MW3-130319**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	JML	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: DM1-MW1-130319 **Lab ID: 60140753001** Collected: 03/19/13 11:24 Received: 03/20/13 08:30 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		03/22/13 16:09	74-84-0	
Ethene	ND	ug/L	6.2	1		03/22/13 16:09	74-85-1	
Methane	**25.3**	ug/L	6.6	1		03/22/13 16:09	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1830**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:25	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**86000**	ug/L	100	1	03/21/13 10:30	03/22/13 12:19	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:19	7439-89-6	
Magnesium, Dissolved	**93100**	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:19	7439-95-4	
Potassium, Dissolved	**3400**	ug/L	500	1	03/21/13 10:30	03/22/13 12:19	7440-09-7	
Sodium, Dissolved	**254000**	ug/L	500	1	03/21/13 10:30	03/22/13 12:19	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	53-70-3	
Fluoranthene	**0.12**	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 18:05	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 18:05	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:05	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	68	%	40-120	1	03/20/13 00:00	03/27/13 18:05	321-60-8	IO
Terphenyl-d14 (S)	77	%	43-122	1	03/20/13 00:00	03/27/13 18:05	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 03:17	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 03:17	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 03:17	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 03:17	1330-20-7	
Surrogates								
Toluene-d8 (S)	110	%	80-120	1		03/21/13 03:17	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		03/21/13 03:17	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-120	1		03/21/13 03:17	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 03:17		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: DM1-MW1-130319 **Lab ID: 60140753001** Collected: 03/19/13 11:24 Received: 03/20/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**484**	mg/L	20.0	1		03/21/13 09:52		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 09:52		
Alkalinity, Total as CaCO3	**484**	mg/L	20.0	1		03/21/13 09:52		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1970**	umhos/cm	1.0	1		03/20/13 13:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/21/13 18:01		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:52	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**4.8**	mg/L	1.0	1		03/22/13 14:27	24959-67-9	M1
Chloride	**136**	mg/L	20.0	20		03/23/13 14:23	16887-00-6	
Sulfate	**494**	mg/L	100	100		03/23/13 15:10	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/20/13 13:47		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/20/13 13:47		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/20/13 13:47		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: DM1-MW2-130319 **Lab ID: 60140753002** Collected: 03/19/13 12:26 Received: 03/20/13 08:30 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		03/22/13 16:31	74-84-0	
Ethene	ND	ug/L	6.2	1		03/22/13 16:31	74-85-1	
Methane	**7.1**	ug/L	6.6	1		03/22/13 16:31	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**965**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:26	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**57700**	ug/L	100	1	03/21/13 10:30	03/22/13 12:21	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:21	7439-89-6	
Magnesium, Dissolved	**84800**	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:21	7439-95-4	
Potassium, Dissolved	**6210**	ug/L	500	1	03/21/13 10:30	03/22/13 12:21	7440-09-7	
Sodium, Dissolved	**214000**	ug/L	500	1	03/21/13 10:30	03/22/13 12:21	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 18:27	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 18:27	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 18:27	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	65	%	40-120	1	03/20/13 00:00	03/27/13 18:27	321-60-8	
Terphenyl-d14 (S)	78	%	43-122	1	03/20/13 00:00	03/27/13 18:27	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 03:32	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 03:32	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 03:32	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 03:32	1330-20-7	
Surrogates								
Toluene-d8 (S)	104	%	80-120	1		03/21/13 03:32	2037-26-5	
4-Bromofluorobenzene (S)	98	%	80-120	1		03/21/13 03:32	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	80-120	1		03/21/13 03:32	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 03:32		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: DM1-MW2-130319 **Lab ID: 60140753002** Collected: 03/19/13 12:26 Received: 03/20/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**307**	mg/L	20.0	1		03/21/13 10:11		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 10:11		
Alkalinity, Total as CaCO3	**307**	mg/L	20.0	1		03/21/13 10:11		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1720**	umhos/cm	1.0	1		03/20/13 13:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/21/13 18:01		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:53	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**3.4**	mg/L	1.0	1		03/22/13 15:13	24959-67-9	
Chloride	**123**	mg/L	20.0	20		03/23/13 15:56	16887-00-6	
Sulfate	**492**	mg/L	100	100		03/23/13 16:12	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/20/13 13:49		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/20/13 13:49		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/20/13 13:49		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: DM1-MW3-130319 **Lab ID: 60140753003** Collected: 03/19/13 13:13 Received: 03/20/13 08:30 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		03/22/13 16:41	74-84-0	
Ethene	ND	ug/L	6.2	1		03/22/13 16:41	74-85-1	
Methane	ND	ug/L	6.6	1		03/22/13 16:41	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**2140**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:33	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**99200**	ug/L	100	1	03/21/13 10:30	03/22/13 12:23	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:23	7439-89-6	
Magnesium, Dissolved	**55100**	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:23	7439-95-4	
Potassium, Dissolved	**3180**	ug/L	500	1	03/21/13 10:30	03/22/13 12:23	7440-09-7	
Sodium, Dissolved	**161000**	ug/L	500	1	03/21/13 10:30	03/22/13 12:23	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	208-96-8	
Anthracene	**0.11**	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	86-73-7	
Indeno(1,2,3-cd)pyrene	**0.42**	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/20/13 00:00	03/28/13 09:35	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/20/13 00:00	03/28/13 09:35	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/28/13 09:35	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	55	%	40-120	1	03/20/13 00:00	03/28/13 09:35	321-60-8	IO
Terphenyl-d14 (S)	239	%	43-122	1	03/20/13 00:00	03/28/13 09:35	1718-51-0	1e
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 03:48	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 03:48	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 03:48	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 03:48	1330-20-7	
Surrogates								
Toluene-d8 (S)	106	%	80-120	1		03/21/13 03:48	2037-26-5	
4-Bromofluorobenzene (S)	97	%	80-120	1		03/21/13 03:48	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	80-120	1		03/21/13 03:48	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 03:48		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: DM1-MW3-130319 **Lab ID: 60140753003** Collected: 03/19/13 13:13 Received: 03/20/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**284**	mg/L	20.0	1		03/21/13 10:16		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 10:16		
Alkalinity, Total as CaCO3	**284**	mg/L	20.0	1		03/21/13 10:16		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1640**	umhos/cm	1.0	1		03/20/13 13:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/21/13 18:01		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:53	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**2.2**	mg/L	1.0	1		03/22/13 15:29	24959-67-9	
Chloride	**91.5**	mg/L	10.0	10		03/23/13 16:27	16887-00-6	
Sulfate	**448**	mg/L	100	100		03/23/13 17:14	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.27**	mg/L	0.10	1		03/21/13 10:53		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/21/13 10:53		
Nitrogen, NO2 plus NO3	**0.30**	mg/L	0.10	1		03/21/13 10:53		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: PL1-MW2-130319 **Lab ID: 60140753004** Collected: 03/19/13 14:41 Received: 03/20/13 08:30 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		03/22/13 16:52	74-84-0	
Ethene	ND	ug/L	6.2	1		03/22/13 16:52	74-85-1	
Methane	ND	ug/L	6.6	1		03/22/13 16:52	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1830**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:35	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**106000**	ug/L	100	1	03/21/13 10:30	03/22/13 12:25	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:25	7439-89-6	
Magnesium, Dissolved	**75900**	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:25	7439-95-4	
Potassium, Dissolved	**2330**	ug/L	500	1	03/21/13 10:30	03/22/13 12:25	7440-09-7	
Sodium, Dissolved	**115000**	ug/L	500	1	03/21/13 10:30	03/22/13 12:25	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 19:10	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 19:10	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:10	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	57	%	40-120	1	03/20/13 00:00	03/27/13 19:10	321-60-8	
Terphenyl-d14 (S)	77	%	43-122	1	03/20/13 00:00	03/27/13 19:10	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 04:03	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 04:03	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 04:03	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 04:03	1330-20-7	
Surrogates								
Toluene-d8 (S)	108	%	80-120	1		03/21/13 04:03	2037-26-5	
4-Bromofluorobenzene (S)	101	%	80-120	1		03/21/13 04:03	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	80-120	1		03/21/13 04:03	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 04:03		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: PL1-MW2-130319 **Lab ID: 60140753004** Collected: 03/19/13 14:41 Received: 03/20/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**311**	mg/L	20.0	1		03/21/13 10:21		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 10:21		
Alkalinity, Total as CaCO3	**311**	mg/L	20.0	1		03/21/13 10:21		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1480**	umhos/cm	1.0	1		03/20/13 13:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/21/13 18:01		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:54	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/22/13 15:44	24959-67-9	
Chloride	**32.8**	mg/L	5.0	5		03/23/13 17:29	16887-00-6	
Sulfate	**484**	mg/L	100	100		03/23/13 17:45	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/21/13 10:56		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/21/13 10:56		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/21/13 10:56		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: PL1-MW3-130319 **Lab ID: 60140753005** Collected: 03/19/13 15:46 Received: 03/20/13 08:30 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		03/22/13 17:03	74-84-0	
Ethene	ND	ug/L	6.2	1		03/22/13 17:03	74-85-1	
Methane	ND	ug/L	6.6	1		03/22/13 17:03	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1900**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:37	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**86000**	ug/L	100	1	03/21/13 10:30	03/22/13 12:27	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:27	7439-89-6	
Magnesium, Dissolved	**63000**	ug/L	50.0	1	03/21/13 10:30	03/22/13 12:27	7439-95-4	
Potassium, Dissolved	**3020**	ug/L	500	1	03/21/13 10:30	03/22/13 12:27	7440-09-7	
Sodium, Dissolved	**58600**	ug/L	500	1	03/21/13 10:30	03/22/13 12:27	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 19:32	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/20/13 00:00	03/27/13 19:32	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/20/13 00:00	03/27/13 19:32	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	66	%	40-120	1	03/20/13 00:00	03/27/13 19:32	321-60-8	
Terphenyl-d14 (S)	75	%	43-122	1	03/20/13 00:00	03/27/13 19:32	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 04:19	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 04:19	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 04:19	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 04:19	1330-20-7	
Surrogates								
Toluene-d8 (S)	110	%	80-120	1		03/21/13 04:19	2037-26-5	
4-Bromofluorobenzene (S)	101	%	80-120	1		03/21/13 04:19	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	80-120	1		03/21/13 04:19	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 04:19		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Sample: PL1-MW3-130319 **Lab ID: 60140753005** Collected: 03/19/13 15:46 Received: 03/20/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**296**	mg/L	20.0	1		03/21/13 10:30		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 10:30		
Alkalinity, Total as CaCO3	**296**	mg/L	20.0	1		03/21/13 10:30		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1090**	umhos/cm	1.0	1		03/20/13 13:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/21/13 18:01		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:55	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/22/13 16:00	24959-67-9	
Chloride	**32.3**	mg/L	5.0	5		03/23/13 18:00	16887-00-6	
Sulfate	**265**	mg/L	50.0	50		03/23/13 18:16	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.58**	mg/L	0.10	1		03/21/13 10:58		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/21/13 10:58		
Nitrogen, NO2 plus NO3	**0.57**	mg/L	0.10	1		03/21/13 10:58		

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: AIR/16995 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1396862 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	03/22/13 15:59	
Ethene	ug/L	ND	6.2	03/22/13 15:59	
Methane	ug/L	ND	6.6	03/22/13 15:59	

LABORATORY CONTROL SAMPLE & LCSD: 1396863 1396864

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	110	114	97	101	85-115	4	20	
Ethene	ug/L	106	103	106	97	100	85-115	3	20	
Methane	ug/L	60.7	62.1	62.5	102	103	85-115	.7	20	

SAMPLE DUPLICATE: 1397174

Parameter	Units	92151763005 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	62.3	63.4	2	20	
Ethene	ug/L	3.3J	3.4J		20	
Methane	ug/L	10900	11100	2	20	E

SAMPLE DUPLICATE: 1397176

Parameter	Units	60140753001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	25.3	25.4	.4	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: MPRP/21941 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1156781 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	03/22/13 10:09	

LABORATORY CONTROL SAMPLE: 1156782

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1156783 1156784

Parameter	Units	60140747001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	314	1000	1000	1350	1290	104	97	75-125	5	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: MPRP/21949 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1157214 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	03/22/13 10:56	
Iron, Dissolved	ug/L	ND	50.0	03/22/13 10:56	
Magnesium, Dissolved	ug/L	ND	50.0	03/22/13 10:56	
Potassium, Dissolved	ug/L	ND	500	03/22/13 10:56	
Sodium, Dissolved	ug/L	ND	500	03/22/13 10:56	

LABORATORY CONTROL SAMPLE: 1157215

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9810	98	80-120	
Iron, Dissolved	ug/L	10000	9810	98	80-120	
Magnesium, Dissolved	ug/L	10000	10100	101	80-120	
Potassium, Dissolved	ug/L	10000	9740	97	80-120	
Sodium, Dissolved	ug/L	10000	9940	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1157216 1157217

Parameter	Units	60140684001 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	92800	10000	10000	98000	98600	52	57	75-125	1	20	M1
Iron, Dissolved	ug/L	ND	10000	10000	9740	9660	97	96	75-125	1	20	
Magnesium, Dissolved	ug/L	107000	10000	10000	113000	114000	52	61	75-125	1	20	M1
Potassium, Dissolved	ug/L	2260	10000	10000	12400	12400	101	102	75-125	0	20	
Sodium, Dissolved	ug/L	115000	10000	10000	120000	120000	45	49	75-125	0	20	M1

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: MSV/52498 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1156927 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/21/13 00:58	
Ethylbenzene	ug/L	ND	1.0	03/21/13 00:58	
Toluene	ug/L	ND	1.0	03/21/13 00:58	
Xylene (Total)	ug/L	ND	3.0	03/21/13 00:58	
1,2-Dichloroethane-d4 (S)	%	98	80-120	03/21/13 00:58	
4-Bromofluorobenzene (S)	%	104	80-120	03/21/13 00:58	
Toluene-d8 (S)	%	107	80-120	03/21/13 00:58	

LABORATORY CONTROL SAMPLE: 1156928

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.4	102	73-122	
Ethylbenzene	ug/L	20	22.8	114	76-123	
Toluene	ug/L	20	22.6	113	76-122	
Xylene (Total)	ug/L	60	70.3	117	76-122	
1,2-Dichloroethane-d4 (S)	%			92	80-120	
4-Bromofluorobenzene (S)	%			97	80-120	
Toluene-d8 (S)	%			106	80-120	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: OEXT/37622 Analysis Method: EPA 8270C by SIM
QC Batch Method: EPA 3510C Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1156984 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.10	03/27/13 17:21	
Acenaphthylene	ug/L	ND	0.10	03/27/13 17:21	
Anthracene	ug/L	ND	0.10	03/27/13 17:21	
Benzo(a)anthracene	ug/L	ND	0.10	03/27/13 17:21	
Benzo(a)pyrene	ug/L	ND	0.10	03/27/13 17:21	
Benzo(b)fluoranthene	ug/L	ND	0.10	03/27/13 17:21	
Benzo(g,h,i)perylene	ug/L	ND	0.10	03/27/13 17:21	
Benzo(k)fluoranthene	ug/L	ND	0.10	03/27/13 17:21	
Chrysene	ug/L	ND	0.10	03/27/13 17:21	
Dibenz(a,h)anthracene	ug/L	ND	0.10	03/27/13 17:21	
Fluoranthene	ug/L	ND	0.10	03/27/13 17:21	
Fluorene	ug/L	ND	0.10	03/27/13 17:21	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.10	03/27/13 17:21	
Naphthalene	ug/L	ND	0.50	03/27/13 17:21	
Phenanthrene	ug/L	ND	0.50	03/27/13 17:21	
Pyrene	ug/L	ND	0.10	03/27/13 17:21	
2-Fluorobiphenyl (S)	%	72	40-120	03/27/13 17:21	
Terphenyl-d14 (S)	%	99	43-122	03/27/13 17:21	

LABORATORY CONTROL SAMPLE: 1156985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/L	10	6.7	67	43-120	
Acenaphthylene	ug/L	10	6.9	69	40-120	
Anthracene	ug/L	10	7.3	73	41-120	
Benzo(a)anthracene	ug/L	10	8.6	86	34-137	
Benzo(a)pyrene	ug/L	10	8.4	84	25-133	
Benzo(b)fluoranthene	ug/L	10	7.2	72	30-131	
Benzo(g,h,i)perylene	ug/L	10	8.0	80	10-141	
Benzo(k)fluoranthene	ug/L	10	8.1	81	16-138	
Chrysene	ug/L	10	7.5	75	34-120	
Dibenz(a,h)anthracene	ug/L	10	7.6	76	10-144	
Fluoranthene	ug/L	10	8.1	81	47-126	
Fluorene	ug/L	10	7.1	71	44-120	
Indeno(1,2,3-cd)pyrene	ug/L	10	8.2	82	10-141	
Naphthalene	ug/L	10	6.6	66	41-120	
Phenanthrene	ug/L	10	6.4	64	44-120	
Pyrene	ug/L	10	6.9	69	41-120	
2-Fluorobiphenyl (S)	%			59	40-120	
Terphenyl-d14 (S)	%			64	43-122	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: WET/40308 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1156990 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	03/21/13 09:12	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	03/21/13 09:12	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	03/21/13 09:12	

LABORATORY CONTROL SAMPLE: 1156991

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	478	96	90-110	

SAMPLE DUPLICATE: 1156992

Parameter	Units	60140684001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	349	355	2	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	349	355	2	10	

SAMPLE DUPLICATE: 1156993

Parameter	Units	60140753004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	311	311	0	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	311	311	0	10	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: WET/40292 Analysis Method: SM 2510B
QC Batch Method: SM 2510B Analysis Description: 2510B Specific Conductance
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1156658 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	03/20/13 13:34	

SAMPLE DUPLICATE: 1156659

Parameter	Units	60140753001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	1970	1970	0	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: WET/40303 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

SAMPLE DUPLICATE: 1156962

Parameter	Units	60140753001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	0	5	H6

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: WET/40293 Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1156680 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Total	mg/L	ND	0.050	03/20/13 13:29	

LABORATORY CONTROL SAMPLE: 1156681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.49	97	80-120	

MATRIX SPIKE SAMPLE: 1156682

Parameter	Units	60140509021 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.50	98	75-125	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: WETA/23973 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

METHOD BLANK: 1158203 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/22/13 13:56	
Sulfate	mg/L	ND	1.0	03/22/13 13:56	

METHOD BLANK: 1158861 Matrix: Water
Associated Lab Samples: 60140753001, 60140753002, 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	03/23/13 13:21	

LABORATORY CONTROL SAMPLE: 1158204

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	98	90-110	

LABORATORY CONTROL SAMPLE: 1158862

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1158205 1158206

Parameter	Units	60140753001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	4.8	5	5	8.1	7.7	66	59	75-119	4	10	M1
Chloride	mg/L	136	100	100	235	238	99	102	64-118	1	12	
Sulfate	mg/L	494	500	500	939	945	89	90	61-119	1	10	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: WETA/23934 | Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 | Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60140753001, 60140753002

METHOD BLANK: 1156642 | Matrix: Water
Associated Lab Samples: 60140753001, 60140753002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	03/20/13 13:25	
Nitrogen, Nitrite	mg/L	ND	0.10	03/20/13 13:25	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	03/20/13 13:25	

LABORATORY CONTROL SAMPLE: 1156643

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.7	104	90-110	
Nitrogen, Nitrite	mg/L	.4	0.38	96	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.0	102	90-110	

MATRIX SPIKE SAMPLE: 1156644

Parameter	Units	60140744002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.43	1.6	1.9	94	90-110	
Nitrogen, Nitrite	mg/L	ND	.4	0.39	90	90-110	
Nitrogen, NO2 plus NO3	mg/L	0.46	2	2.3	93	90-110	

MATRIX SPIKE SAMPLE: 1156646

Parameter	Units	60140744003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	4.5	3.2	7.1	81	90-110	M1
Nitrogen, Nitrite	mg/L	0.14J	.8	0.94	100	90-110	
Nitrogen, NO2 plus NO3	mg/L	4.6	4	8.0	85	90-110	M1

SAMPLE DUPLICATE: 1156645

Parameter	Units	60140761001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	49.1	48.9	0	15	
Nitrogen, Nitrite	mg/L	ND	1.6J		31	
Nitrogen, NO2 plus NO3	mg/L	50.7	50.5	0	13	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

QC Batch: WETA/23952 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60140753003, 60140753004, 60140753005

METHOD BLANK: 1157118 Matrix: Water
Associated Lab Samples: 60140753003, 60140753004, 60140753005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	03/21/13 10:50	
Nitrogen, Nitrite	mg/L	ND	0.10	03/21/13 10:50	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	03/21/13 10:50	

LABORATORY CONTROL SAMPLE: 1157119

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.7	107	90-110	
Nitrogen, Nitrite	mg/L	.4	0.41	101	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.1	106	90-110	

MATRIX SPIKE SAMPLE: 1157120

Parameter	Units	60140809001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	4.5	3.2	7.6	97	90-110	
Nitrogen, Nitrite	mg/L	ND	.8	0.81	102	90-110	
Nitrogen, NO2 plus NO3	mg/L	4.5	4	8.4	98	90-110	

SAMPLE DUPLICATE: 1157121

Parameter	Units	60140753003 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	0.27	0.27	2	15	
Nitrogen, Nitrite	mg/L	ND	ND		31	
Nitrogen, NO2 plus NO3	mg/L	0.30	0.27	12	13	

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QUALIFIERS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

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.

PRL - Pace Reporting 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.

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TNI - The NELAC Institute.

LABORATORIES

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

BATCH QUALIFIERS

Batch: MSV/52498

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

Batch: OEXT/37622

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

ANALYTE QUALIFIERS

1e	Surrogate recovery outside control limits (high), confirmed by re-analyses.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H6	Analysis initiated outside of the 15 minute EPA recommended holding time.
IO	The internal standard response was outside the laboratory acceptance limits confirmed by reanalysis. The results reported are from the most QC compliant analysis.
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: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60140753001	**DM1-MW1-130319**	RSK 175	AIR/16995		
60140753002	**DM1-MW2-130319**	RSK 175	AIR/16995		
60140753003	**DM1-MW3-130319**	RSK 175	AIR/16995		
60140753004	**PL1-MW2-130319**	RSK 175	AIR/16995		
60140753005	**PL1-MW3-130319**	RSK 175	AIR/16995		
60140753001	**DM1-MW1-130319**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140753002	**DM1-MW2-130319**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140753003	**DM1-MW3-130319**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140753004	**PL1-MW2-130319**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140753005	**PL1-MW3-130319**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140753001	**DM1-MW1-130319**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140753002	**DM1-MW2-130319**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140753003	**DM1-MW3-130319**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140753004	**PL1-MW2-130319**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140753005	**PL1-MW3-130319**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140753001	**DM1-MW1-130319**	EPA 3510C	OEXT/37622	EPA 8270C by SIM	MSSV/11870
60140753002	**DM1-MW2-130319**	EPA 3510C	OEXT/37622	EPA 8270C by SIM	MSSV/11870
60140753003	**DM1-MW3-130319**	EPA 3510C	OEXT/37622	EPA 8270C by SIM	MSSV/11870
60140753004	**PL1-MW2-130319**	EPA 3510C	OEXT/37622	EPA 8270C by SIM	MSSV/11870
60140753005	**PL1-MW3-130319**	EPA 3510C	OEXT/37622	EPA 8270C by SIM	MSSV/11870
60140753001	**DM1-MW1-130319**	EPA 8260	MSV/52498		
60140753002	**DM1-MW2-130319**	EPA 8260	MSV/52498		
60140753003	**DM1-MW3-130319**	EPA 8260	MSV/52498		
60140753004	**PL1-MW2-130319**	EPA 8260	MSV/52498		
60140753005	**PL1-MW3-130319**	EPA 8260	MSV/52498		
60140753001	**DM1-MW1-130319**	SM 2320B	WET/40308		
60140753002	**DM1-MW2-130319**	SM 2320B	WET/40308		
60140753003	**DM1-MW3-130319**	SM 2320B	WET/40308		
60140753004	**PL1-MW2-130319**	SM 2320B	WET/40308		
60140753005	**PL1-MW3-130319**	SM 2320B	WET/40308		
60140753001	**DM1-MW1-130319**	SM 2510B	WET/40292		
60140753002	**DM1-MW2-130319**	SM 2510B	WET/40292		
60140753003	**DM1-MW3-130319**	SM 2510B	WET/40292		
60140753004	**PL1-MW2-130319**	SM 2510B	WET/40292		
60140753005	**PL1-MW3-130319**	SM 2510B	WET/40292		
60140753001	**DM1-MW1-130319**	SM 4500-H+B	WET/40303		
60140753002	**DM1-MW2-130319**	SM 4500-H+B	WET/40303		
60140753003	**DM1-MW3-130319**	SM 4500-H+B	WET/40303		
60140753004	**PL1-MW2-130319**	SM 4500-H+B	WET/40303		
60140753005	**PL1-MW3-130319**	SM 4500-H+B	WET/40303		
60140753001	**DM1-MW1-130319**	SM 4500-S-2 D	WET/40293		
60140753002	**DM1-MW2-130319**	SM 4500-S-2 D	WET/40293		
60140753003	**DM1-MW3-130319**	SM 4500-S-2 D	WET/40293		
60140753004	**PL1-MW2-130319**	SM 4500-S-2 D	WET/40293		
60140753005	**PL1-MW3-130319**	SM 4500-S-2 D	WET/40293		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140753

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60140753001	**DM1-MW1-130319**	EPA 300.0	WETA/23973		
60140753002	**DM1-MW2-130319**	EPA 300.0	WETA/23973		
60140753003	**DM1-MW3-130319**	EPA 300.0	WETA/23973		
60140753004	**PL1-MW2-130319**	EPA 300.0	WETA/23973		
60140753005	**PL1-MW3-130319**	EPA 300.0	WETA/23973		
60140753001	**DM1-MW1-130319**	EPA 353.2	WETA/23934		
60140753002	**DM1-MW2-130319**	EPA 353.2	WETA/23934		
60140753003	**DM1-MW3-130319**	EPA 353.2	WETA/23952		
60140753004	**PL1-MW2-130319**	EPA 353.2	WETA/23952		
60140753005	**PL1-MW3-130319**	EPA 353.2	WETA/23952		

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Sample Condition Upon Receipt

WO#: 60140753
60140753

Client Name: Terracon

Optional
Proj Due Date:
Proj Name:

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

Tracking #: 8995 0509 5687 Pace Shipping Label Used? Yes ☑ No ☑ 3/20/13

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-112 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.0

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 3/20/13 BA

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: Includes date/time/ID/analyses Matrix: WT	☑Yes ☑No ☐N/A	13. No Analysis on COC.
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: Pace Trip Blank lot # (if purchased):	☐Yes ☑No ☐N/A	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: 3/20/13 dmw 3/20/13

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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: of

1680456

Section A Required Client Information:

Company: TERRACON
Address: 10625 I70 FRN (WHEAT RIDGE, CO 80033)
Email To: JRANSTEY@TERRACON.COM
Phone: 303 423 3300 Fax: 303 423 3353
Requested Due Date/TAT:

Section B Required Project Information:

Report To: JON ANSTEY
Copy To:
Purchase Order No.:
Project Name:
Project Number:

Section C Invoice Information:

Attention: JON ANSTEY
Company Name: TERRACON
Address: 10625 I70 FRN, WHEAT RIDGE CO 80033
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

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

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

60140753

Section D Required Client Information

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DM1-MW-130319	WT	G			3/19/13	1124		12	X		X		X						01
2	DM1-MW2-130319	WT	G				1226		12	X		X		X						02
3	DM1-MW3-130319	WT	G				1313		12	X		X		X						03
4	PL1-MW2-130319	WT	G				1441		12	X		X		X						04
5	PL1-MW3-130319	WT	G				1546		12	X		X		X						05
6																				
7																				
8																				
9																				
10																				
11																				
12																				

Y/N

1BP4U 1BP3U 1BP3U 1BP3U 3D6QU 3V6QU 2AG4U

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature]	3/19/13	1730	[signature]	3/20/13	830	1.0	Y	N	Y

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

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

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.

F-ALL-Q-020rev.07, 15-May-2007

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

March 28, 2013

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

RE: Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on March 22, 2013. 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

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CERTIFICATIONS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
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 #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2
Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60140981001	**SGU-MW3-130321**	Water	03/21/13 11:03	03/22/13 08:35
60140981002	**SGU-MW2-130321**	Water	03/21/13 11:32	03/22/13 08:35
60140981003	**CL1-MW3-130321**	Water	03/21/13 12:57	03/22/13 08:35

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SAMPLE ANALYTE COUNT

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60140981001	**SGU-MW3-130321**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140981002	**SGU-MW2-130321**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140981003	**CL1-MW3-130321**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K

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ANALYTICAL RESULTS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Sample: SGU-MW3-130321 **Lab ID: 60140981001** Collected: 03/21/13 11:03 Received: 03/22/13 08:35 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		03/26/13 15:32	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 15:32	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 15:32	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4070**	ug/L	100	10	03/25/13 15:00	03/27/13 13:18	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**88200**	ug/L	100	1	03/25/13 15:00	03/27/13 12:01	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:01	7439-89-6	
Magnesium, Dissolved	**49000**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:01	7439-95-4	
Potassium, Dissolved	**3940**	ug/L	500	1	03/25/13 15:00	03/27/13 12:01	7440-09-7	
Sodium, Dissolved	**47700**	ug/L	500	1	03/25/13 15:00	03/27/13 12:01	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 16:16	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 16:16	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:16	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	65	%	40-120	1	03/25/13 00:00	03/27/13 16:16	321-60-8	
Terphenyl-d14 (S)	77	%	43-122	1	03/25/13 00:00	03/27/13 16:16	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/25/13 21:13	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/25/13 21:13	100-41-4	
Toluene	ND	ug/L	1.0	1		03/25/13 21:13	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/25/13 21:13	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	80-120	1		03/25/13 21:13	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		03/25/13 21:13	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-120	1		03/25/13 21:13	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/25/13 21:13		

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ANALYTICAL RESULTS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Sample: SGU-MW3-130321 **Lab ID: 60140981001** Collected: 03/21/13 11:03 Received: 03/22/13 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**632**	mg/L	20.0	1		03/26/13 09:34		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 09:34		
Alkalinity, Total as CaCO3	**632**	mg/L	20.0	1		03/26/13 09:34		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**917**	umhos/cm	1.0	1		03/25/13 15:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/26/13 02:36	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/27/13 11:58	24959-67-9	
Chloride	**28.3**	mg/L	5.0	5		03/27/13 12:44	16887-00-6	
Sulfate	**152**	mg/L	20.0	20		03/27/13 13:00	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**4.4**	mg/L	0.10	1		03/22/13 11:38		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/22/13 11:38		
Nitrogen, NO2 plus NO3	**4.4**	mg/L	0.10	1		03/22/13 11:38		

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ANALYTICAL RESULTS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Sample: SGU-MW2-130321 **Lab ID: 60140981002** Collected: 03/21/13 11:32 Received: 03/22/13 08:35 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		03/26/13 15:43	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 15:43	74-85-1	
Methane	**8.7**	ug/L	6.6	1		03/26/13 15:43	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1720**	ug/L	100	10	03/25/13 15:00	03/27/13 13:20	7440-24-6	M6,R1
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**92600**	ug/L	100	1	03/25/13 15:00	03/27/13 11:59	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 11:59	7439-89-6	
Magnesium, Dissolved	**57800**	ug/L	50.0	1	03/25/13 15:00	03/27/13 11:59	7439-95-4	
Potassium, Dissolved	**3390**	ug/L	500	1	03/25/13 15:00	03/27/13 11:59	7440-09-7	
Sodium, Dissolved	**78600**	ug/L	500	1	03/25/13 15:00	03/27/13 11:59	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 16:38	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 16:38	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 16:38	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	69	%	40-120	1	03/25/13 00:00	03/27/13 16:38	321-60-8	
Terphenyl-d14 (S)	87	%	43-122	1	03/25/13 00:00	03/27/13 16:38	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/25/13 21:28	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/25/13 21:28	100-41-4	
Toluene	ND	ug/L	1.0	1		03/25/13 21:28	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/25/13 21:28	1330-20-7	
Surrogates								
Toluene-d8 (S)	101	%	80-120	1		03/25/13 21:28	2037-26-5	
4-Bromofluorobenzene (S)	96	%	80-120	1		03/25/13 21:28	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	80-120	1		03/25/13 21:28	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/25/13 21:28		

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ANALYTICAL RESULTS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Sample: SGU-MW2-130321 **Lab ID: 60140981002** Collected: 03/21/13 11:32 Received: 03/22/13 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**359**	mg/L	20.0	1		03/26/13 09:40		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 09:40		
Alkalinity, Total as CaCO3	**359**	mg/L	20.0	1		03/26/13 09:40		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1100**	umhos/cm	1.0	1		03/25/13 15:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.9**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/26/13 02:36	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/27/13 12:13	24959-67-9	
Chloride	**34.2**	mg/L	5.0	5		03/27/13 13:15	16887-00-6	
Sulfate	**228**	mg/L	20.0	20		03/27/13 14:02	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**7.2**	mg/L	0.20	2		03/22/13 11:47		M1
Nitrogen, Nitrite	ND	mg/L	0.20	2		03/22/13 11:47		
Nitrogen, NO2 plus NO3	**7.3**	mg/L	0.20	2		03/22/13 11:47		M1

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ANALYTICAL RESULTS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Sample: CL1-MW3-130321 **Lab ID: 60140981003** Collected: 03/21/13 12:57 Received: 03/22/13 08:35 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		03/26/13 15:53	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 15:53	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 15:53	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3450**	ug/L	100	10	03/25/13 15:00	03/27/13 13:26	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**85500**	ug/L	100	1	03/25/13 15:00	03/27/13 12:03	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:03	7439-89-6	
Magnesium, Dissolved	**75100**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:03	7439-95-4	
Potassium, Dissolved	**2830**	ug/L	500	1	03/25/13 15:00	03/27/13 12:03	7440-09-7	
Sodium, Dissolved	**63600**	ug/L	500	1	03/25/13 15:00	03/27/13 12:03	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 17:00	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 17:00	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 17:00	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	60	%	40-120	1	03/25/13 00:00	03/27/13 17:00	321-60-8	
Terphenyl-d14 (S)	80	%	43-122	1	03/25/13 00:00	03/27/13 17:00	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/25/13 21:43	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/25/13 21:43	100-41-4	
Toluene	ND	ug/L	1.0	1		03/25/13 21:43	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/25/13 21:43	1330-20-7	
Surrogates								
Toluene-d8 (S)	94	%	80-120	1		03/25/13 21:43	2037-26-5	
4-Bromofluorobenzene (S)	97	%	80-120	1		03/25/13 21:43	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	80-120	1		03/25/13 21:43	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/25/13 21:43		

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ANALYTICAL RESULTS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Sample: CL1-MW3-130321 **Lab ID: 60140981003** Collected: 03/21/13 12:57 Received: 03/22/13 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**389**	mg/L	20.0	1		03/26/13 09:50		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 09:50		
Alkalinity, Total as CaCO3	**389**	mg/L	20.0	1		03/26/13 09:50		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1130**	umhos/cm	1.0	1		03/25/13 15:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.7**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/26/13 02:37	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/27/13 12:29	24959-67-9	
Chloride	**35.3**	mg/L	5.0	5		03/27/13 14:17	16887-00-6	
Sulfate	**189**	mg/L	20.0	20		03/27/13 14:33	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**14.8**	mg/L	0.50	5		03/22/13 11:49		
Nitrogen, Nitrite	ND	mg/L	0.50	5		03/22/13 11:49		
Nitrogen, NO2 plus NO3	**14.9**	mg/L	0.50	5		03/22/13 11:49		

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: AIR/17008 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1397820 Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	03/26/13 11:56	
Ethene	ug/L	ND	6.2	03/26/13 11:56	
Methane	ug/L	ND	6.6	03/26/13 11:56	

LABORATORY CONTROL SAMPLE & LCSD: 1397821 1397822

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	104	111	91	98	85-115	7	20	
Ethene	ug/L	106	97.1	104	91	98	85-115	7	20	
Methane	ug/L	60.7	59.5	62.2	98	102	85-115	4	20	

SAMPLE DUPLICATE: 1398188

Parameter	Units	60141077001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	14.1	13.3	5	20	

SAMPLE DUPLICATE: 1398273

Parameter	Units	60141077009 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	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: MPRP/22005 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1159240 Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	03/27/13 13:14	

LABORATORY CONTROL SAMPLE: 1159241

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1159242 1159243

Parameter	Units	60140981002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	1720	1000	1000	2770	27000	104	2526	75-125	163	20	M6,R1

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: MPRP/22001 | Analysis Method: EPA 6010
QC Batch Method: EPA 3010 | Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1159222 | Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	03/27/13 11:46	
Iron, Dissolved	ug/L	ND	50.0	03/27/13 11:46	
Magnesium, Dissolved	ug/L	ND	50.0	03/27/13 11:46	
Potassium, Dissolved	ug/L	ND	500	03/27/13 11:46	
Sodium, Dissolved	ug/L	ND	500	03/27/13 11:46	

LABORATORY CONTROL SAMPLE: 1159223

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9640	96	80-120	
Iron, Dissolved	ug/L	10000	9740	97	80-120	
Magnesium, Dissolved	ug/L	10000	10000	100	80-120	
Potassium, Dissolved	ug/L	10000	9280	93	80-120	
Sodium, Dissolved	ug/L	10000	9720	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1159224 1159225

Parameter	Units	60140981001 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	88200	10000	10000	96900	97300	87	91	75-125	0	20	
Iron, Dissolved	ug/L	ND	10000	10000	9730	9650	97	96	75-125	1	20	
Magnesium, Dissolved	ug/L	49000	10000	10000	58200	57900	92	90	75-125	0	20	
Potassium, Dissolved	ug/L	3940	10000	10000	14100	14100	102	102	75-125	0	20	
Sodium, Dissolved	ug/L	47700	10000	10000	57800	58000	100	103	75-125	1	20	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: MSV/52584 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1159312 | Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/25/13 20:42	
Ethylbenzene	ug/L	ND	1.0	03/25/13 20:42	
Toluene	ug/L	ND	1.0	03/25/13 20:42	
Xylene (Total)	ug/L	ND	3.0	03/25/13 20:42	
1,2-Dichloroethane-d4 (S)	%	101	80-120	03/25/13 20:42	
4-Bromofluorobenzene (S)	%	104	80-120	03/25/13 20:42	
Toluene-d8 (S)	%	94	80-120	03/25/13 20:42	

LABORATORY CONTROL SAMPLE: 1159313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.1	101	73-122	
Ethylbenzene	ug/L	20	18.4	92	76-123	
Toluene	ug/L	20	19.0	95	76-122	
Xylene (Total)	ug/L	60	56.8	95	76-122	
1,2-Dichloroethane-d4 (S)	%			105	80-120	
4-Bromofluorobenzene (S)	%			93	80-120	
Toluene-d8 (S)	%			96	80-120	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: OEXT/37675 | Analysis Method: EPA 8270C by SIM
QC Batch Method: EPA 3510C | Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1159135 | Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.10	03/27/13 14:05	
Acenaphthylene	ug/L	ND	0.10	03/27/13 14:05	
Anthracene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(a)anthracene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(a)pyrene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(b)fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(g,h,i)perylene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(k)fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Chrysene	ug/L	ND	0.10	03/27/13 14:05	
Dibenz(a,h)anthracene	ug/L	ND	0.10	03/27/13 14:05	
Fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Fluorene	ug/L	ND	0.10	03/27/13 14:05	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.10	03/27/13 14:05	
Naphthalene	ug/L	ND	0.50	03/27/13 14:05	
Phenanthrene	ug/L	ND	0.50	03/27/13 14:05	
Pyrene	ug/L	ND	0.10	03/27/13 14:05	
2-Fluorobiphenyl (S)	%	69	40-120	03/27/13 14:05	
Terphenyl-d14 (S)	%	98	43-122	03/27/13 14:05	

LABORATORY CONTROL SAMPLE: 1159136

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/L	10	7.4	74	43-120	
Acenaphthylene	ug/L	10	7.6	76	40-120	
Anthracene	ug/L	10	7.7	77	41-120	
Benzo(a)anthracene	ug/L	10	8.3	83	34-137	
Benzo(a)pyrene	ug/L	10	9.2	92	25-133	
Benzo(b)fluoranthene	ug/L	10	9.4	94	30-131	
Benzo(g,h,i)perylene	ug/L	10	9.8	98	10-141	
Benzo(k)fluoranthene	ug/L	10	10.7	107	16-138	
Chrysene	ug/L	10	8.1	81	34-120	
Dibenz(a,h)anthracene	ug/L	10	11.0	110	10-144	
Fluoranthene	ug/L	10	7.8	78	47-126	
Fluorene	ug/L	10	7.5	75	44-120	
Indeno(1,2,3-cd)pyrene	ug/L	10	11.0	110	10-141	
Naphthalene	ug/L	10	7.4	74	41-120	
Phenanthrene	ug/L	10	7.0	70	44-120	
Pyrene	ug/L	10	9.3	93	41-120	
2-Fluorobiphenyl (S)	%			67	40-120	
Terphenyl-d14 (S)	%			88	43-122	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: WET/40383 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1159179 Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	03/26/13 09:26	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	03/26/13 09:26	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	03/26/13 09:26	

LABORATORY CONTROL SAMPLE: 1159180

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1159183

Parameter	Units	60140981002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	359	371	3	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	359	371	3	10	

SAMPLE DUPLICATE: 1159184

Parameter	Units	60141077006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	346	352	2	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	346	352	2	10	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: WET/40361 Analysis Method: SM 2510B
QC Batch Method: SM 2510B Analysis Description: 2510B Specific Conductance
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1159043 Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	03/25/13 15:10	

SAMPLE DUPLICATE: 1159044

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	1280	1280	0	20	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: WET/40363 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60140981001, 60140981002, 60140981003

SAMPLE DUPLICATE: 1159047

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	7.9	0	5	H6

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: WET/40384 Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1159189 Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Total	mg/L	ND	0.050	03/26/13 02:12	

LABORATORY CONTROL SAMPLE: 1159190

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.54	109	80-120	

MATRIX SPIKE SAMPLE: 1159191

Parameter	Units	60140850001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.40	81	75-125	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: WETA/24012 | Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 | Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1160091 | Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	03/27/13 11:27	
Chloride	mg/L	ND	1.0	03/27/13 11:27	
Sulfate	mg/L	ND	1.0	03/27/13 11:27	

LABORATORY CONTROL SAMPLE: 1160092

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	100	90-110	
Chloride	mg/L	5	5.0	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1159617 1159618

Parameter	Units	60140747001 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	50	50	51.1	51.0	97	97	75-119	0	10	
Chloride	mg/L	ND	50	50	49.4	49.0	89	88	64-118	1	12	
Sulfate	mg/L	82.3	50	50	134	133	103	100	61-119	1	10	

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QUALITY CONTROL DATA

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

QC Batch: WETA/23975 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60140981001, 60140981002, 60140981003

METHOD BLANK: 1158266 Matrix: Water
Associated Lab Samples: 60140981001, 60140981002, 60140981003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	03/22/13 11:35	
Nitrogen, Nitrite	mg/L	ND	0.10	03/22/13 11:35	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	03/22/13 11:35	

LABORATORY CONTROL SAMPLE: 1158267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.7	106	90-110	
Nitrogen, Nitrite	mg/L	.4	0.39	98	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.1	105	90-110	

MATRIX SPIKE SAMPLE: 1158268

Parameter	Units	60140941001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	5.0	3.2	8.2	101	90-110	
Nitrogen, Nitrite	mg/L	ND	.8	0.87	107	90-110	
Nitrogen, NO2 plus NO3	mg/L	5.0	4	9.1	102	90-110	

MATRIX SPIKE SAMPLE: 1158270

Parameter	Units	60140981002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	7.2	3.2	9.8	82	90-110	M1
Nitrogen, Nitrite	mg/L	ND	.8	0.85	99	90-110	
Nitrogen, NO2 plus NO3	mg/L	7.3	4	10.7	86	90-110	M1

SAMPLE DUPLICATE: 1158269

Parameter	Units	60140990003 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	ND	ND		15	
Nitrogen, Nitrite	mg/L	ND	ND		31	
Nitrogen, NO2 plus NO3	mg/L	ND	ND		13	

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QUALIFIERS

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

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.
PRL - Pace Reporting 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: OEXT/37675

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

Batch: MSV/52584

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

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA recommended holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G Wellsite Sampling
Pace Project No.: 60140981

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60140981001	**SGU-MW3-130321**	RSK 175	AIR/17008		
60140981002	**SGU-MW2-130321**	RSK 175	AIR/17008		
60140981003	**CL1-MW3-130321**	RSK 175	AIR/17008		
60140981001	**SGU-MW3-130321**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60140981002	**SGU-MW2-130321**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60140981003	**CL1-MW3-130321**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60140981001	**SGU-MW3-130321**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60140981002	**SGU-MW2-130321**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60140981003	**CL1-MW3-130321**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60140981001	**SGU-MW3-130321**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60140981002	**SGU-MW2-130321**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60140981003	**CL1-MW3-130321**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60140981001	**SGU-MW3-130321**	EPA 8260	MSV/52584		
60140981002	**SGU-MW2-130321**	EPA 8260	MSV/52584		
60140981003	**CL1-MW3-130321**	EPA 8260	MSV/52584		
60140981001	**SGU-MW3-130321**	SM 2320B	WET/40383		
60140981002	**SGU-MW2-130321**	SM 2320B	WET/40383		
60140981003	**CL1-MW3-130321**	SM 2320B	WET/40383		
60140981001	**SGU-MW3-130321**	SM 2510B	WET/40361		
60140981002	**SGU-MW2-130321**	SM 2510B	WET/40361		
60140981003	**CL1-MW3-130321**	SM 2510B	WET/40361		
60140981001	**SGU-MW3-130321**	SM 4500-H+B	WET/40363		
60140981002	**SGU-MW2-130321**	SM 4500-H+B	WET/40363		
60140981003	**CL1-MW3-130321**	SM 4500-H+B	WET/40363		
60140981001	**SGU-MW3-130321**	SM 4500-S-2 D	WET/40384		
60140981002	**SGU-MW2-130321**	SM 4500-S-2 D	WET/40384		
60140981003	**CL1-MW3-130321**	SM 4500-S-2 D	WET/40384		
60140981001	**SGU-MW3-130321**	EPA 300.0	WETA/24012		
60140981002	**SGU-MW2-130321**	EPA 300.0	WETA/24012		
60140981003	**CL1-MW3-130321**	EPA 300.0	WETA/24012		
60140981001	**SGU-MW3-130321**	EPA 353.2	WETA/23975		
60140981002	**SGU-MW2-130321**	EPA 353.2	WETA/23975		
60140981003	**CL1-MW3-130321**	EPA 353.2	WETA/23975		

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Sample Condition Upon Receipt

WO#: 60140981

60140981

Optional
Proj Due Date:
Proj Name:

Client Name: Terracon

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

Tracking #: 802369466798 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 ☐

Thermometer Used: T-112 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 1.6

Temperature should be above freezing to 6°C

Date and initials of person examining contents: JNS 3/22/13 1005

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. N_2NO_3, pH
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: Includes date/time/ID/analyses Matrix: water	☑Yes	☐No	☐N/A	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 JNS / Lot # of added preservative
Trip Blank present: Pace Trip Blank lot # (if purchased): N/A	☐Yes	☑No	☑N/A	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: AMW Date: 3/22/13

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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:	jcgraves@terracon.com
Phone: 970-474-0359	Fax: 970-484-0454
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Jon Anstey
Copy To:	
Purchase Order No.	
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Jon Anstey
Company Name:	TERRACON
Address:	
Pace Quote Reference:	
Pace Project Manager:	Colleen Koporc
Pace Profile #:	

REGULATORY AGENCY

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

Site Location STATE: _____

Section D Required Client Information

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

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

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	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	Anions/Alk/Cond/pH	BTEX VOCs	8270 PAH SIM/PROPOC	SM4500S SULFIDE	RSK 175 Diss Methane	Strontium	Metals Na, K, Ca, Mg (Diss)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SGU-MW3-130321	WT	G			3/21/13	1103		12	7		1	3	1					X	X	X	X	X	X	X		3(DG9H) 2(AGAH) 1(BP2N) 1(BP3N) 1(BP2U) 1(BP3U) 1(BP3S)
2	SGU-MW2-130321	WT	G			3/21/13	1132		12	7		1	3	1					X	X	X	X	X	X	X		
3	CL1-MW3-130321	WT	G			3/21/13	1257		12	7		1	3	1					X	X	X	X	X	X	X		
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

60140981

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	JOSEPH WILEY/TERRACON	3/21/13	15:52	Pace	3/22/13	835	1.6	Y	Y	Y
							Temp in °C	Received on ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: JOSEPH WILEY

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 3/21/13

*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

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Lenexa, KS 66219
(913)599-5665

March 29, 2013

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

RE: Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on March 19, 2013. 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

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CERTIFICATIONS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
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 #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2
Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60140684001	**SH1-MW3-130318**	Water	03/18/13 12:09	03/19/13 08:30
60140684002	**SH1-MW2-130318**	Water	03/18/13 12:42	03/19/13 08:30
60140684003	**SH1-MW1-130318**	Water	03/18/13 13:17	03/19/13 08:30
60140684004	**SH2-MW1-130318**	Water	03/18/13 14:45	03/19/13 08:30
60140684005	**SH2-MW2-130318**	Water	03/18/13 15:35	03/19/13 08:30
60140684006	**SH2-MW3-130318**	Water	03/18/13 16:19	03/19/13 08:30

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SAMPLE ANALYTE COUNT

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60140684001	**SH1-MW3-130318**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140684002	**SH1-MW2-130318**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140684003	**SH1-MW1-130318**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140684004	**SH2-MW1-130318**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K

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SAMPLE ANALYTE COUNT

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140684005	**SH2-MW2-130318**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140684006	**SH2-MW3-130318**	RSK 175	SK4	3	PASI-M
		EPA 6010	TDS	1	PASI-K
		EPA 6010	TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH1-MW3-130318 **Lab ID: 60140684001** Collected: 03/18/13 12:09 Received: 03/19/13 08:30 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		03/21/13 16:38	74-84-0	
Ethene	ND	ug/L	6.2	1		03/21/13 16:38	74-85-1	
Methane	ND	ug/L	6.6	1		03/21/13 16:38	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**2830**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:13	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**92800**	ug/L	100	1	03/21/13 10:30	03/22/13 11:00	7440-70-2	M1
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:00	7439-89-6	
Magnesium, Dissolved	**107000**	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:00	7439-95-4	M1
Potassium, Dissolved	**2260**	ug/L	500	1	03/21/13 10:30	03/22/13 11:00	7440-09-7	
Sodium, Dissolved	**115000**	ug/L	500	1	03/21/13 10:30	03/22/13 11:00	7440-23-5	M1
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	83-32-9	H2
Acenaphthylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	208-96-8	H2
Anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	207-08-9	H2
Chrysene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	53-70-3	H2
Fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	206-44-0	H2
Fluorene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	86-73-7	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	193-39-5	H2
Naphthalene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 15:15	91-20-3	H2
Phenanthrene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 15:15	85-01-8	H2
Pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:15	129-00-0	H2
Surrogates								
2-Fluorobiphenyl (S)	62	%	40-120	1	03/27/13 00:00	03/28/13 15:15	321-60-8	
Terphenyl-d14 (S)	80	%	43-122	1	03/27/13 00:00	03/28/13 15:15	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 01:45	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 01:45	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 01:45	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 01:45	1330-20-7	
Surrogates								
Toluene-d8 (S)	114	%	80-120	1		03/21/13 01:45	2037-26-5	
4-Bromofluorobenzene (S)	95	%	80-120	1		03/21/13 01:45	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	80-120	1		03/21/13 01:45	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 01:45		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH1-MW3-130318 **Lab ID: 60140684001** Collected: 03/18/13 12:09 Received: 03/19/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**349**	mg/L	20.0	1		03/21/13 09:17		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 09:17		
Alkalinity, Total as CaCO3	**349**	mg/L	20.0	1		03/21/13 09:17		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1600**	umhos/cm	1.0	1		03/19/13 17:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/19/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:47	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/20/13 17:28	24959-67-9	
Chloride	**36.6**	mg/L	5.0	5		03/21/13 09:26	16887-00-6	
Sulfate	**452**	mg/L	50.0	50		03/21/13 09:44	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**5.7**	mg/L	0.50	5		03/19/13 16:06		M1
Nitrogen, Nitrite	ND	mg/L	0.50	5		03/19/13 16:06		
Nitrogen, NO2 plus NO3	**5.8**	mg/L	0.50	5		03/19/13 16:06		M1

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH1-MW2-130318 **Lab ID: 60140684002** Collected: 03/18/13 12:42 Received: 03/19/13 08:30 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		03/21/13 16:59	74-84-0	
Ethene	ND	ug/L	6.2	1		03/21/13 16:59	74-85-1	
Methane	**9.1**	ug/L	6.6	1		03/21/13 16:59	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3470**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:15	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**101000**	ug/L	100	1	03/21/13 10:30	03/22/13 11:05	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:05	7439-89-6	
Magnesium, Dissolved	**99700**	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:05	7439-95-4	
Potassium, Dissolved	**3060**	ug/L	500	1	03/21/13 10:30	03/22/13 11:05	7440-09-7	
Sodium, Dissolved	**117000**	ug/L	500	1	03/21/13 10:30	03/22/13 11:05	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	83-32-9	H2
Acenaphthylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	208-96-8	H2
Anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	207-08-9	H2
Chrysene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	53-70-3	H2
Fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	206-44-0	H2
Fluorene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	86-73-7	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	193-39-5	H2
Naphthalene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 15:37	91-20-3	H2
Phenanthrene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 15:37	85-01-8	H2
Pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:37	129-00-0	H2
Surrogates								
2-Fluorobiphenyl (S)	55	%	40-120	1	03/27/13 00:00	03/28/13 15:37	321-60-8	
Terphenyl-d14 (S)	84	%	43-122	1	03/27/13 00:00	03/28/13 15:37	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 02:00	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 02:00	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 02:00	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 02:00	1330-20-7	
Surrogates								
Toluene-d8 (S)	109	%	80-120	1		03/21/13 02:00	2037-26-5	
4-Bromofluorobenzene (S)	97	%	80-120	1		03/21/13 02:00	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	80-120	1		03/21/13 02:00	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 02:00		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH1-MW2-130318 **Lab ID: 60140684002** Collected: 03/18/13 12:42 Received: 03/19/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**365**	mg/L	20.0	1		03/21/13 09:27		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 09:27		
Alkalinity, Total as CaCO3	**365**	mg/L	20.0	1		03/21/13 09:27		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1570**	umhos/cm	1.0	1		03/19/13 17:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/19/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:47	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/20/13 18:21	24959-67-9	
Chloride	**37.5**	mg/L	5.0	5		03/21/13 16:52	16887-00-6	
Sulfate	**431**	mg/L	50.0	50		03/21/13 17:10	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**7.9**	mg/L	0.50	5		03/19/13 16:08		
Nitrogen, Nitrite	ND	mg/L	0.50	5		03/19/13 16:08		
Nitrogen, NO2 plus NO3	**8.0**	mg/L	0.50	5		03/19/13 16:08		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH1-MW1-130318 **Lab ID: 60140684003** Collected: 03/18/13 13:17 Received: 03/19/13 08:30 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		03/21/13 17:20	74-84-0	
Ethene	ND	ug/L	6.2	1		03/21/13 17:20	74-85-1	
Methane	ND	ug/L	6.6	1		03/21/13 17:20	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**5910**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:17	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**92100**	ug/L	100	1	03/21/13 10:30	03/22/13 11:07	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:07	7439-89-6	
Magnesium, Dissolved	**110000**	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:07	7439-95-4	
Potassium, Dissolved	**2570**	ug/L	500	1	03/21/13 10:30	03/22/13 11:07	7440-09-7	
Sodium, Dissolved	**118000**	ug/L	500	1	03/21/13 10:30	03/22/13 11:07	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	83-32-9	H2
Acenaphthylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	208-96-8	H2
Anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	207-08-9	H2
Chrysene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	53-70-3	H2
Fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	206-44-0	H2
Fluorene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	86-73-7	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	193-39-5	H2
Naphthalene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 15:59	91-20-3	H2
Phenanthrene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 15:59	85-01-8	H2
Pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 15:59	129-00-0	H2
Surrogates								
2-Fluorobiphenyl (S)	75	%	40-120	1	03/27/13 00:00	03/28/13 15:59	321-60-8	
Terphenyl-d14 (S)	88	%	43-122	1	03/27/13 00:00	03/28/13 15:59	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 02:15	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 02:15	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 02:15	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 02:15	1330-20-7	
Surrogates								
Toluene-d8 (S)	110	%	80-120	1		03/21/13 02:15	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		03/21/13 02:15	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	80-120	1		03/21/13 02:15	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 02:15		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH1-MW1-130318 **Lab ID: 60140684003** Collected: 03/18/13 13:17 Received: 03/19/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**345**	mg/L	20.0	1		03/21/13 09:31		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 09:31		
Alkalinity, Total as CaCO3	**345**	mg/L	20.0	1		03/21/13 09:31		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1590**	umhos/cm	1.0	1		03/19/13 17:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/19/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:48	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/20/13 18:39	24959-67-9	
Chloride	**37.5**	mg/L	5.0	5		03/21/13 13:52	16887-00-6	
Sulfate	**486**	mg/L	50.0	50		03/21/13 14:49	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**8.3**	mg/L	0.50	5		03/19/13 16:10		
Nitrogen, Nitrite	ND	mg/L	0.50	5		03/19/13 16:10		
Nitrogen, NO2 plus NO3	**8.4**	mg/L	0.50	5		03/19/13 16:10		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH2-MW1-130318 **Lab ID: 60140684004** Collected: 03/18/13 14:45 Received: 03/19/13 08:30 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		03/21/13 17:31	74-84-0	
Ethene	ND	ug/L	6.2	1		03/21/13 17:31	74-85-1	
Methane	ND	ug/L	6.6	1		03/21/13 17:31	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3440**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:19	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**189000**	ug/L	100	1	03/21/13 10:30	03/22/13 11:09	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:09	7439-89-6	
Magnesium, Dissolved	**121000**	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:09	7439-95-4	
Potassium, Dissolved	**3860**	ug/L	500	1	03/21/13 10:30	03/22/13 11:09	7440-09-7	
Sodium, Dissolved	**102000**	ug/L	500	1	03/21/13 10:30	03/22/13 11:09	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	83-32-9	H2
Acenaphthylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	208-96-8	H2
Anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	207-08-9	H2
Chrysene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	53-70-3	H2
Fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	206-44-0	H2
Fluorene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	86-73-7	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	193-39-5	H2
Naphthalene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 16:21	91-20-3	H2
Phenanthrene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 16:21	85-01-8	H2
Pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:21	129-00-0	H2
Surrogates								
2-Fluorobiphenyl (S)	62	%	40-120	1	03/27/13 00:00	03/28/13 16:21	321-60-8	
Terphenyl-d14 (S)	84	%	43-122	1	03/27/13 00:00	03/28/13 16:21	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 02:31	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 02:31	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 02:31	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 02:31	1330-20-7	
Surrogates								
Toluene-d8 (S)	113	%	80-120	1		03/21/13 02:31	2037-26-5	
4-Bromofluorobenzene (S)	96	%	80-120	1		03/21/13 02:31	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	80-120	1		03/21/13 02:31	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 02:31		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH2-MW1-130318 **Lab ID: 60140684004** Collected: 03/18/13 14:45 Received: 03/19/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**345**	mg/L	20.0	1		03/21/13 09:37		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 09:37		
Alkalinity, Total as CaCO3	**345**	mg/L	20.0	1		03/21/13 09:37		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1940**	umhos/cm	1.0	1		03/19/13 17:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/19/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:49	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/20/13 18:57	24959-67-9	
Chloride	**40.2**	mg/L	5.0	5		03/21/13 15:06	16887-00-6	
Sulfate	**799**	mg/L	50.0	50		03/21/13 15:24	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**11.4**	mg/L	0.50	5		03/19/13 16:11		
Nitrogen, Nitrite	**0.63**	mg/L	0.50	5		03/19/13 16:11		
Nitrogen, NO2 plus NO3	**12.0**	mg/L	0.50	5		03/19/13 16:11		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH2-MW2-130318 **Lab ID: 60140684005** Collected: 03/18/13 15:35 Received: 03/19/13 08:30 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		03/21/13 17:42	74-84-0	
Ethene	ND	ug/L	6.2	1		03/21/13 17:42	74-85-1	
Methane	ND	ug/L	6.6	1		03/21/13 17:42	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3870**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:21	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**225000**	ug/L	100	1	03/21/13 10:30	03/22/13 11:11	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:11	7439-89-6	
Magnesium, Dissolved	**121000**	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:11	7439-95-4	
Potassium, Dissolved	**5720**	ug/L	500	1	03/21/13 10:30	03/22/13 11:11	7440-09-7	
Sodium, Dissolved	**111000**	ug/L	500	1	03/21/13 10:30	03/22/13 11:11	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	83-32-9	H2
Acenaphthylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	208-96-8	H2
Anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	207-08-9	H2
Chrysene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	53-70-3	H2
Fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	206-44-0	H2
Fluorene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	86-73-7	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	193-39-5	H2
Naphthalene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 16:42	91-20-3	H2
Phenanthrene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 16:42	85-01-8	H2
Pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 16:42	129-00-0	H2
Surrogates								
2-Fluorobiphenyl (S)	65	%	40-120	1	03/27/13 00:00	03/28/13 16:42	321-60-8	
Terphenyl-d14 (S)	84	%	43-122	1	03/27/13 00:00	03/28/13 16:42	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 02:46	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 02:46	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 02:46	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 02:46	1330-20-7	
Surrogates								
Toluene-d8 (S)	117	%	80-120	1		03/21/13 02:46	2037-26-5	
4-Bromofluorobenzene (S)	97	%	80-120	1		03/21/13 02:46	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	80-120	1		03/21/13 02:46	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 02:46		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH2-MW2-130318 **Lab ID: 60140684005** Collected: 03/18/13 15:35 Received: 03/19/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**315**	mg/L	20.0	1		03/21/13 09:42		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 09:42		
Alkalinity, Total as CaCO3	**315**	mg/L	20.0	1		03/21/13 09:42		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**2060**	umhos/cm	1.0	1		03/19/13 17:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/19/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:50	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/20/13 19:14	24959-67-9	
Chloride	**43.8**	mg/L	5.0	5		03/21/13 15:41	16887-00-6	
Sulfate	**824**	mg/L	100	100		03/21/13 15:59	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**13.6**	mg/L	0.50	5		03/19/13 16:12		
Nitrogen, Nitrite	ND	mg/L	0.50	5		03/19/13 16:12		
Nitrogen, NO2 plus NO3	**13.8**	mg/L	0.50	5		03/19/13 16:12		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH2-MW3-130318 **Lab ID: 60140684006** Collected: 03/18/13 16:19 Received: 03/19/13 08:30 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		03/21/13 17:53	74-84-0	
Ethene	ND	ug/L	6.2	1		03/21/13 17:53	74-85-1	
Methane	ND	ug/L	6.6	1		03/21/13 17:53	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4520**	ug/L	10.0	1	03/20/13 15:00	03/22/13 10:23	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**220000**	ug/L	100	1	03/21/13 10:30	03/22/13 11:13	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:13	7439-89-6	
Magnesium, Dissolved	**115000**	ug/L	50.0	1	03/21/13 10:30	03/22/13 11:13	7439-95-4	
Potassium, Dissolved	**4690**	ug/L	500	1	03/21/13 10:30	03/22/13 11:13	7440-09-7	
Sodium, Dissolved	**104000**	ug/L	500	1	03/21/13 10:30	03/22/13 11:13	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	83-32-9	H2
Acenaphthylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	208-96-8	H2
Anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	120-12-7	H2
Benzo(a)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	56-55-3	H2
Benzo(a)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	50-32-8	H2
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	205-99-2	H2
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	191-24-2	H2
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	207-08-9	H2
Chrysene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	218-01-9	H2
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	53-70-3	H2
Fluoranthene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	206-44-0	H2
Fluorene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	86-73-7	H2
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	193-39-5	H2
Naphthalene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 17:04	91-20-3	H2
Phenanthrene	ND	ug/L	0.50	1	03/27/13 00:00	03/28/13 17:04	85-01-8	H2
Pyrene	ND	ug/L	0.10	1	03/27/13 00:00	03/28/13 17:04	129-00-0	H2
Surrogates								
2-Fluorobiphenyl (S)	65	%	40-120	1	03/27/13 00:00	03/28/13 17:04	321-60-8	
Terphenyl-d14 (S)	84	%	43-122	1	03/27/13 00:00	03/28/13 17:04	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 03:02	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 03:02	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 03:02	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 03:02	1330-20-7	
Surrogates								
Toluene-d8 (S)	108	%	80-120	1		03/21/13 03:02	2037-26-5	
4-Bromofluorobenzene (S)	101	%	80-120	1		03/21/13 03:02	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	80-120	1		03/21/13 03:02	17060-07-0	
Preservation pH	**7.0**		0.10	1		03/21/13 03:02		

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ANALYTICAL RESULTS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Sample: SH2-MW3-130318 **Lab ID: 60140684006** Collected: 03/18/13 16:19 Received: 03/19/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**324**	mg/L	20.0	1		03/21/13 09:47		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/21/13 09:47		
Alkalinity, Total as CaCO3	**324**	mg/L	20.0	1		03/21/13 09:47		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**2080**	umhos/cm	1.0	1		03/19/13 17:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/19/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/20/13 13:51	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/20/13 19:32	24959-67-9	
Chloride	**44.8**	mg/L	5.0	5		03/21/13 16:17	16887-00-6	
Sulfate	**847**	mg/L	100	100		03/21/13 16:34	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**13.0**	mg/L	0.50	5		03/19/13 16:13		
Nitrogen, Nitrite	ND	mg/L	0.50	5		03/19/13 16:13		
Nitrogen, NO2 plus NO3	**13.1**	mg/L	0.50	5		03/19/13 16:13		

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: AIR/16988 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1396000 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	03/21/13 16:27	
Ethene	ug/L	ND	6.2	03/21/13 16:27	
Methane	ug/L	ND	6.6	03/21/13 16:27	

LABORATORY CONTROL SAMPLE & LCSD: 1396001 1396002

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	113	112	99	98	85-115	.9	20	
Ethene	ug/L	106	105	104	99	98	85-115	1	20	
Methane	ug/L	60.7	61.8	61.1	102	101	85-115	1	20	

SAMPLE DUPLICATE: 1396003

Parameter	Units	60140684002 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	9.1	10.2	12	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: MPRP/21941 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1156781 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	03/22/13 10:09	

LABORATORY CONTROL SAMPLE: 1156782

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1156783 1156784

Parameter	Units	60140747001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	314	1000	1000	1350	1290	104	97	75-125	5	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: MPRP/21949 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1157214 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	03/22/13 10:56	
Iron, Dissolved	ug/L	ND	50.0	03/22/13 10:56	
Magnesium, Dissolved	ug/L	ND	50.0	03/22/13 10:56	
Potassium, Dissolved	ug/L	ND	500	03/22/13 10:56	
Sodium, Dissolved	ug/L	ND	500	03/22/13 10:56	

LABORATORY CONTROL SAMPLE: 1157215

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9810	98	80-120	
Iron, Dissolved	ug/L	10000	9810	98	80-120	
Magnesium, Dissolved	ug/L	10000	10100	101	80-120	
Potassium, Dissolved	ug/L	10000	9740	97	80-120	
Sodium, Dissolved	ug/L	10000	9940	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1157216 1157217

Parameter	Units	60140684001 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	92800	10000	10000	98000	98600	52	57	75-125	1	20	M1
Iron, Dissolved	ug/L	ND	10000	10000	9740	9660	97	96	75-125	1	20	
Magnesium, Dissolved	ug/L	107000	10000	10000	113000	114000	52	61	75-125	1	20	M1
Potassium, Dissolved	ug/L	2260	10000	10000	12400	12400	101	102	75-125	0	20	
Sodium, Dissolved	ug/L	115000	10000	10000	120000	120000	45	49	75-125	0	20	M1

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: MSV/52498 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1156927 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/21/13 00:58	
Ethylbenzene	ug/L	ND	1.0	03/21/13 00:58	
Toluene	ug/L	ND	1.0	03/21/13 00:58	
Xylene (Total)	ug/L	ND	3.0	03/21/13 00:58	
1,2-Dichloroethane-d4 (S)	%	98	80-120	03/21/13 00:58	
4-Bromofluorobenzene (S)	%	104	80-120	03/21/13 00:58	
Toluene-d8 (S)	%	107	80-120	03/21/13 00:58	

LABORATORY CONTROL SAMPLE: 1156928

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	20.4	102	73-122	
Ethylbenzene	ug/L	20	22.8	114	76-123	
Toluene	ug/L	20	22.6	113	76-122	
Xylene (Total)	ug/L	60	70.3	117	76-122	
1,2-Dichloroethane-d4 (S)	%			92	80-120	
4-Bromofluorobenzene (S)	%			97	80-120	
Toluene-d8 (S)	%			106	80-120	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: OEXT/37704 Analysis Method: EPA 8270C by SIM
QC Batch Method: EPA 3510C Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1159797 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.10	03/28/13 14:31	
Acenaphthylene	ug/L	ND	0.10	03/28/13 14:31	
Anthracene	ug/L	ND	0.10	03/28/13 14:31	
Benzo(a)anthracene	ug/L	ND	0.10	03/28/13 14:31	
Benzo(a)pyrene	ug/L	ND	0.10	03/28/13 14:31	
Benzo(b)fluoranthene	ug/L	ND	0.10	03/28/13 14:31	
Benzo(g,h,i)perylene	ug/L	ND	0.10	03/28/13 14:31	
Benzo(k)fluoranthene	ug/L	ND	0.10	03/28/13 14:31	
Chrysene	ug/L	ND	0.10	03/28/13 14:31	
Dibenz(a,h)anthracene	ug/L	ND	0.10	03/28/13 14:31	
Fluoranthene	ug/L	ND	0.10	03/28/13 14:31	
Fluorene	ug/L	ND	0.10	03/28/13 14:31	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.10	03/28/13 14:31	
Naphthalene	ug/L	ND	0.50	03/28/13 14:31	
Phenanthrene	ug/L	ND	0.50	03/28/13 14:31	
Pyrene	ug/L	ND	0.10	03/28/13 14:31	
2-Fluorobiphenyl (S)	%	60	40-120	03/28/13 14:31	
Terphenyl-d14 (S)	%	72	43-122	03/28/13 14:31	

LABORATORY CONTROL SAMPLE: 1159798

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/L	10	7.3	73	43-120	
Acenaphthylene	ug/L	10	7.6	76	40-120	
Anthracene	ug/L	10	8.0	80	41-120	
Benzo(a)anthracene	ug/L	10	7.8	78	34-137	
Benzo(a)pyrene	ug/L	10	8.4	84	25-133	
Benzo(b)fluoranthene	ug/L	10	7.5	75	30-131	
Benzo(g,h,i)perylene	ug/L	10	8.0	80	10-141	
Benzo(k)fluoranthene	ug/L	10	7.2	72	16-138	
Chrysene	ug/L	10	6.9	69	34-120	
Dibenz(a,h)anthracene	ug/L	10	8.0	80	10-144	
Fluoranthene	ug/L	10	7.7	77	47-126	
Fluorene	ug/L	10	7.6	76	44-120	
Indeno(1,2,3-cd)pyrene	ug/L	10	7.3	73	10-141	
Naphthalene	ug/L	10	6.8	68	41-120	
Phenanthrene	ug/L	10	7.1	71	44-120	
Pyrene	ug/L	10	8.0	80	41-120	
2-Fluorobiphenyl (S)	%			66	40-120	
Terphenyl-d14 (S)	%			72	43-122	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: WET/40308 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1156990 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	03/21/13 09:12	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	03/21/13 09:12	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	03/21/13 09:12	

LABORATORY CONTROL SAMPLE: 1156991

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	478	96	90-110	

SAMPLE DUPLICATE: 1156992

Parameter	Units	60140684001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	349	355	2	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	349	355	2	10	

SAMPLE DUPLICATE: 1156993

Parameter	Units	60140753004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	311	311	0	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	311	311	0	10	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: WET/40275 Analysis Method: SM 2510B
QC Batch Method: SM 2510B Analysis Description: 2510B Specific Conductance
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1156163 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	03/19/13 17:10	

SAMPLE DUPLICATE: 1156164

Parameter	Units	60140381003 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	5120	5090	1	20	

SAMPLE DUPLICATE: 1156165

Parameter	Units	60140684003 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	1590	1590	0	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: WET/40267 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

SAMPLE DUPLICATE: 1155980

Parameter	Units	60140587002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.3	1	5	H6

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: WET/40293 — Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D — Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1156680 — Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Total	mg/L	ND	0.050	03/20/13 13:29	

LABORATORY CONTROL SAMPLE: 1156681

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.49	97	80-120	

MATRIX SPIKE SAMPLE: 1156682

Parameter	Units	60140509021 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.50	98	75-125	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: WETA/23941 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1156803 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	03/20/13 13:52	

METHOD BLANK: 1157030 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/21/13 13:16	
Sulfate	mg/L	ND	1.0	03/21/13 13:16	

LABORATORY CONTROL SAMPLE: 1156804

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	101	90-110	

LABORATORY CONTROL SAMPLE: 1157031

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1156805 1156806

Parameter	Units	60140601005 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	5.0	5.2	95	99	75-119	3	10	
Chloride	mg/L	ND	5	5	4.9	5.1	88	91	64-118	3	12	
Sulfate	mg/L	ND	5	5	5.0	5.2	91	94	61-119	4	10	

MATRIX SPIKE SAMPLE: 1156807

Parameter	Units	60140275007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	500	502	93	75-119	
Chloride	mg/L	1030	500	1470	88	64-118	
Sulfate	mg/L	138	500	580	88	61-119	

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QUALITY CONTROL DATA

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

QC Batch: WETA/23920 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

METHOD BLANK: 1156078 Matrix: Water
Associated Lab Samples: 60140684001, 60140684002, 60140684003, 60140684004, 60140684005, 60140684006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	03/19/13 15:49	
Nitrogen, Nitrite	mg/L	ND	0.10	03/19/13 15:49	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	03/19/13 15:49	

LABORATORY CONTROL SAMPLE: 1156079

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.6	102	90-110	
Nitrogen, Nitrite	mg/L	.4	0.37	92	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.0	100	90-110	

MATRIX SPIKE SAMPLE: 1156080

Parameter	Units	60140684001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	5.7	8	15.5	123	90-110	M1
Nitrogen, Nitrite	mg/L	ND	2	1.9	91	90-110	
Nitrogen, NO2 plus NO3	mg/L	5.8	10	17.4	117	90-110	M1

SAMPLE DUPLICATE: 1156081

Parameter	Units	60140665001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	0.28	0.16	56	15	D6
Nitrogen, Nitrite	mg/L	ND	ND		31	
Nitrogen, NO2 plus NO3	mg/L	0.31	0.18	50	13	D6

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QUALIFIERS

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

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.
PRL - Pace Reporting 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/52498

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

Batch: OEXT/37704

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

ANALYTE QUALIFIERS

D6	The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
H2	Extraction or preparation conducted outside EPA method holding time.
H6	Analysis initiated outside of the 15 minute EPA recommended holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60140684001	**SH1-MW3-130318**	RSK 175	AIR/16988		
60140684002	**SH1-MW2-130318**	RSK 175	AIR/16988		
60140684003	**SH1-MW1-130318**	RSK 175	AIR/16988		
60140684004	**SH2-MW1-130318**	RSK 175	AIR/16988		
60140684005	**SH2-MW2-130318**	RSK 175	AIR/16988		
60140684006	**SH2-MW3-130318**	RSK 175	AIR/16988		
60140684001	**SH1-MW3-130318**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140684002	**SH1-MW2-130318**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140684003	**SH1-MW1-130318**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140684004	**SH2-MW1-130318**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140684005	**SH2-MW2-130318**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140684006	**SH2-MW3-130318**	EPA 3010	MPRP/21941	EPA 6010	ICP/17539
60140684001	**SH1-MW3-130318**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140684002	**SH1-MW2-130318**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140684003	**SH1-MW1-130318**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140684004	**SH2-MW1-130318**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140684005	**SH2-MW2-130318**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140684006	**SH2-MW3-130318**	EPA 3010	MPRP/21949	EPA 6010	ICP/17542
60140684001	**SH1-MW3-130318**	EPA 3510C	OEXT/37704	EPA 8270C by SIM	MSSV/11881
60140684002	**SH1-MW2-130318**	EPA 3510C	OEXT/37704	EPA 8270C by SIM	MSSV/11881
60140684003	**SH1-MW1-130318**	EPA 3510C	OEXT/37704	EPA 8270C by SIM	MSSV/11881
60140684004	**SH2-MW1-130318**	EPA 3510C	OEXT/37704	EPA 8270C by SIM	MSSV/11881
60140684005	**SH2-MW2-130318**	EPA 3510C	OEXT/37704	EPA 8270C by SIM	MSSV/11881
60140684006	**SH2-MW3-130318**	EPA 3510C	OEXT/37704	EPA 8270C by SIM	MSSV/11881
60140684001	**SH1-MW3-130318**	EPA 8260	MSV/52498		
60140684002	**SH1-MW2-130318**	EPA 8260	MSV/52498		
60140684003	**SH1-MW1-130318**	EPA 8260	MSV/52498		
60140684004	**SH2-MW1-130318**	EPA 8260	MSV/52498		
60140684005	**SH2-MW2-130318**	EPA 8260	MSV/52498		
60140684006	**SH2-MW3-130318**	EPA 8260	MSV/52498		
60140684001	**SH1-MW3-130318**	SM 2320B	WET/40308		
60140684002	**SH1-MW2-130318**	SM 2320B	WET/40308		
60140684003	**SH1-MW1-130318**	SM 2320B	WET/40308		
60140684004	**SH2-MW1-130318**	SM 2320B	WET/40308		
60140684005	**SH2-MW2-130318**	SM 2320B	WET/40308		
60140684006	**SH2-MW3-130318**	SM 2320B	WET/40308		
60140684001	**SH1-MW3-130318**	SM 2510B	WET/40275		
60140684002	**SH1-MW2-130318**	SM 2510B	WET/40275		
60140684003	**SH1-MW1-130318**	SM 2510B	WET/40275		
60140684004	**SH2-MW1-130318**	SM 2510B	WET/40275		
60140684005	**SH2-MW2-130318**	SM 2510B	WET/40275		
60140684006	**SH2-MW3-130318**	SM 2510B	WET/40275		
60140684001	**SH1-MW3-130318**	SM 4500-H+B	WET/40267		
60140684002	**SH1-MW2-130318**	SM 4500-H+B	WET/40267		
60140684003	**SH1-MW1-130318**	SM 4500-H+B	WET/40267		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G WELLSITE SAMPLING
Pace Project No.: 60140684

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60140684004	**SH2-MW1-130318**	SM 4500-H+B	WET/40267		
60140684005	**SH2-MW2-130318**	SM 4500-H+B	WET/40267		
60140684006	**SH2-MW3-130318**	SM 4500-H+B	WET/40267		
60140684001	**SH1-MW3-130318**	SM 4500-S-2 D	WET/40293		
60140684002	**SH1-MW2-130318**	SM 4500-S-2 D	WET/40293		
60140684003	**SH1-MW1-130318**	SM 4500-S-2 D	WET/40293		
60140684004	**SH2-MW1-130318**	SM 4500-S-2 D	WET/40293		
60140684005	**SH2-MW2-130318**	SM 4500-S-2 D	WET/40293		
60140684006	**SH2-MW3-130318**	SM 4500-S-2 D	WET/40293		
60140684001	**SH1-MW3-130318**	EPA 300.0	WETA/23941		
60140684002	**SH1-MW2-130318**	EPA 300.0	WETA/23941		
60140684003	**SH1-MW1-130318**	EPA 300.0	WETA/23941		
60140684004	**SH2-MW1-130318**	EPA 300.0	WETA/23941		
60140684005	**SH2-MW2-130318**	EPA 300.0	WETA/23941		
60140684006	**SH2-MW3-130318**	EPA 300.0	WETA/23941		
60140684001	**SH1-MW3-130318**	EPA 353.2	WETA/23920		
60140684002	**SH1-MW2-130318**	EPA 353.2	WETA/23920		
60140684003	**SH1-MW1-130318**	EPA 353.2	WETA/23920		
60140684004	**SH2-MW1-130318**	EPA 353.2	WETA/23920		
60140684005	**SH2-MW2-130318**	EPA 353.2	WETA/23920		
60140684006	**SH2-MW3-130318**	EPA 353.2	WETA/23920		

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Sample Condition Upon Receipt

WO#: 60140684
60140684

Client Name: Terracon

Optional
Proj Due Date:
Proj Name:

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

Tracking #: 8995 0509 5665 / 5676 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 ☑

Thermometer Used: T-112 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.4, 1.2

Date and initials of person examining contents: 3/19/13 BA

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. pH
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: Includes date/time/ID/analyses Matrix: WT	☑Yes ☐No ☐N/A	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: Pace Trip Blank lot # (if purchased):	☐Yes ☑No ☐N/A	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: Per Katie Rockman Project name ~~so~~ should be O&G Wellsite Sampling AMW 3/19/13 AMW 3/19/13

Project Manager Review: AMW Date: 3/19/13

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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: of

1680452

Section A Required Client Information:

Company: TERRACON
Address: 10625 W I70 FR N WHEATRIDGE CO 80033
Email To: jpanstey@terracon.com
Phone: 303 423 3300 Fax: 303 423 3353
Requested Due Date/TAT:

Section B Required Project Information:

Report To: JON ANSTEY
Copy To:
Purchase Order No.:
Project Name: CITY OF LONGMONT
Project Number: 25127127

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

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

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

60140684

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

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	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) BTEX	RSK-175	Anions/Alk/Cond	METALS	SULFIDE	CHLORIDE	Strength	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SH1-MW3-130318	WT	G	3/18/13	1209					X		X		X				X						X		1BP2U 1BP3U 1BP3U-S 1BP2Z12-S 2AG4U
2	SH1-MW2-130318	WT	G		1242					X		X		X				X						X		
3	SH1-MW1-130318	WT	G		1317					X		X		X				X						X		
4	SH2-MW1-130318	WT	G		1445					X		X		X				X						X		
5	SH2-MW2-130318	WT	G		1535					X		X		X				X						X		
6	SH2-MW3-130318	WT	G		1619					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			
	JOSEPH WILEY/TERRACON	3/18/13	1730	[signature]	3/19/13	830	2.4	Y	Y	Y
							1.2	Y	Y	Y

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

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: JOSEPH WILEY

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 03/18/2013

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.

F-ALL-Q-020rev.07, 15-May-2007

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(913)599-5665

April 11, 2013

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

RE: Project: O&G Wellsite
Pace Project No.: 60141077

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on March 23, 2013. 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

REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project:	O&G Wellsite
Pace Project No.:	60141077

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
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 #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2
Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60141077001	**E6W-MW03-130322**	Water	03/22/13 09:35	03/23/13 11:05
60141077002	**E6W-MW02-130322**	Water	03/22/13 09:57	03/23/13 11:05
60141077003	**E6W-MW01-130322**	Water	03/22/13 10:20	03/23/13 11:05
60141077004	**E6T-MW01-130322**	Water	03/22/13 11:15	03/23/13 11:05
60141077005	**E6T-MW03-130322**	Water	03/22/13 11:45	03/23/13 11:05
60141077006	**E6T-MW02-130322**	Water	03/22/13 12:07	03/23/13 11:05
60141077007	**S31-MW02-130322**	Water	03/22/13 13:00	03/23/13 11:05
60141077008	**S31-MW01-130322**	Water	03/22/13 13:08	03/23/13 11:05
60141077009	**S31-MW04-130322**	Water	03/22/13 13:35	03/23/13 11:05
60141077010	**LG8-MW01-130322**	Water	03/22/13 14:46	03/23/13 11:05
60141077011	**LG8-MW02-130322**	Water	03/22/13 15:05	03/23/13 11:05
60141077012	**LG8-MW03-130322**	Water	03/22/13 15:10	03/23/13 11:05

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SAMPLE ANALYTE COUNT

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60141077001	**E6W-MW03-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077002	**E6W-MW02-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077003	**E6W-MW01-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077004	**E6T-MW01-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K

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SAMPLE ANALYTE COUNT

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077005	**E6T-MW03-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077006	**E6T-MW02-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077007	**S31-MW02-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077008	**S31-MW01-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077009	**S31-MW04-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077010	**LG8-MW01-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077011	**LG8-MW02-130322**	RSK 175	SK4	3	PASI-M

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SAMPLE ANALYTE COUNT

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60141077012	**LG8-MW03-130322**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP	5	PASI-K
		EPA 8270C by SIM	CEM	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6W-MW03-130322 **Lab ID: 60141077001** Collected: 03/22/13 09:35 Received: 03/23/13 11:05 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		03/26/13 12:07	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 12:07	74-85-1	
Methane	**14.1**	ug/L	6.6	1		03/26/13 12:07	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**5730**	ug/L	100	10	03/25/13 15:00	03/27/13 13:28	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**192000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:05	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:05	7439-89-6	
Magnesium, Dissolved	**150000**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:05	7439-95-4	
Potassium, Dissolved	**9220**	ug/L	500	1	03/25/13 15:00	03/27/13 12:05	7440-09-7	
Sodium, Dissolved	**184000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:05	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 11:39	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 11:39	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:39	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	43	%	40-120	1	03/25/13 00:00	04/11/13 11:39	321-60-8	
Terphenyl-d14 (S)	76	%	43-122	1	03/25/13 00:00	04/11/13 11:39	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 02:50	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 02:50	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 02:50	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 02:50	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%	80-120	1		03/26/13 02:50	2037-26-5	
4-Bromofluorobenzene (S)	109	%	80-120	1		03/26/13 02:50	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	80-120	1		03/26/13 02:50	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 02:50		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6W-MW03-130322 **Lab ID: 60141077001** Collected: 03/22/13 09:35 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**312**	mg/L	20.0	1		03/26/13 09:54		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 09:54		
Alkalinity, Total as CaCO3	**312**	mg/L	20.0	1		03/26/13 09:54		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**2280**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:56	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/26/13 15:34	24959-67-9	
Chloride	**31.1**	mg/L	5.0	5		03/26/13 15:49	16887-00-6	
Sulfate	**1130**	mg/L	200	200		03/26/13 16:05	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.11**	mg/L	0.10	1		03/23/13 12:06		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:06		
Nitrogen, NO2 plus NO3	**0.12**	mg/L	0.10	1		03/23/13 12:06		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6W-MW02-130322 **Lab ID: 60141077002** Collected: 03/22/13 09:57 Received: 03/23/13 11:05 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		03/26/13 12:28	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 12:28	74-85-1	
Methane	**27.8**	ug/L	6.6	1		03/26/13 12:28	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**5940**	ug/L	100	10	03/25/13 15:00	03/27/13 13:30	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**207000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:07	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:07	7439-89-6	
Magnesium, Dissolved	**175000**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:07	7439-95-4	
Potassium, Dissolved	**10600**	ug/L	500	1	03/25/13 15:00	03/27/13 12:07	7440-09-7	
Sodium, Dissolved	**212000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:07	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:04	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:04	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:04	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	67	%	40-120	1	03/25/13 00:00	04/11/13 08:04	321-60-8	
Terphenyl-d14 (S)	88	%	43-122	1	03/25/13 00:00	04/11/13 08:04	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 03:05	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 03:05	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 03:05	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 03:05	1330-20-7	
Surrogates								
Toluene-d8 (S)	92	%	80-120	1		03/26/13 03:05	2037-26-5	
4-Bromofluorobenzene (S)	104	%	80-120	1		03/26/13 03:05	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	80-120	1		03/26/13 03:05	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 03:05		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6W-MW02-130322 **Lab ID: 60141077002** Collected: 03/22/13 09:57 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**312**	mg/L	20.0	1		03/26/13 09:59		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 09:59		
Alkalinity, Total as CaCO3	**321**	mg/L	20.0	1		03/26/13 09:59		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**2200**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:56	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.5**	mg/L	1.0	1		03/26/13 16:20	24959-67-9	
Chloride	**34.4**	mg/L	5.0	5		03/26/13 17:07	16887-00-6	
Sulfate	**1380**	mg/L	200	200		03/26/13 17:22	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/23/13 12:08		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:08		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/23/13 12:08		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6W-MW01-130322 **Lab ID: 60141077003** Collected: 03/22/13 10:20 Received: 03/23/13 11:05 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		03/26/13 12:39	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 12:39	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 12:39	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4040**	ug/L	100	10	03/25/13 15:00	03/27/13 13:33	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**183000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:09	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:09	7439-89-6	
Magnesium, Dissolved	**126000**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:09	7439-95-4	
Potassium, Dissolved	**6520**	ug/L	500	1	03/25/13 15:00	03/27/13 12:09	7440-09-7	
Sodium, Dissolved	**157000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:09	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:22	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:22	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:22	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	71	%	40-120	1	03/25/13 00:00	04/11/13 08:22	321-60-8	
Terphenyl-d14 (S)	90	%	43-122	1	03/25/13 00:00	04/11/13 08:22	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 03:20	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 03:20	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 03:20	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 03:20	1330-20-7	
Surrogates								
Toluene-d8 (S)	93	%	80-120	1		03/26/13 03:20	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		03/26/13 03:20	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	80-120	1		03/26/13 03:20	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 03:20		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6W-MW01-130322 **Lab ID: 60141077003** Collected: 03/22/13 10:20 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**307**	mg/L	20.0	1		03/26/13 10:04		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 10:04		
Alkalinity, Total as CaCO3	**307**	mg/L	20.0	1		03/26/13 10:04		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**2070**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:56	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/26/13 17:38	24959-67-9	
Chloride	**32.7**	mg/L	5.0	5		03/26/13 17:53	16887-00-6	
Sulfate	**987**	mg/L	200	200		03/26/13 18:09	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.44**	mg/L	0.10	1		03/23/13 12:10		M1
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:10		M1
Nitrogen, NO2 plus NO3	**0.44**	mg/L	0.10	1		03/23/13 12:10		M1

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6T-MW01-130322 **Lab ID: 60141077004** Collected: 03/22/13 11:15 Received: 03/23/13 11:05 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		03/26/13 12:49	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 12:49	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 12:49	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**6140**	ug/L	500	50	03/25/13 15:00	03/27/13 13:39	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**326000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:12	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:12	7439-89-6	
Magnesium, Dissolved	**285000**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:12	7439-95-4	
Potassium, Dissolved	**12100**	ug/L	500	1	03/25/13 15:00	03/27/13 12:12	7440-09-7	
Sodium, Dissolved	**593000**	ug/L	25000	50	03/25/13 15:00	03/27/13 12:37	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:40	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:40	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:40	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	52	%	40-120	1	03/25/13 00:00	04/11/13 08:40	321-60-8	
Terphenyl-d14 (S)	66	%	43-122	1	03/25/13 00:00	04/11/13 08:40	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 03:36	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 03:36	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 03:36	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 03:36	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%	80-120	1		03/26/13 03:36	2037-26-5	
4-Bromofluorobenzene (S)	102	%	80-120	1		03/26/13 03:36	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	80-120	1		03/26/13 03:36	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 03:36		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6T-MW01-130322 **Lab ID: 60141077004** Collected: 03/22/13 11:15 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**334**	mg/L	20.0	1		03/26/13 10:08		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 10:08		
Alkalinity, Total as CaCO3	**334**	mg/L	20.0	1		03/26/13 10:08		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**5030**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:56	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.2**	mg/L	1.0	1		03/26/13 18:24	24959-67-9	
Chloride	**112**	mg/L	10.0	10		03/26/13 18:40	16887-00-6	
Sulfate	**3060**	mg/L	500	500		03/26/13 18:55	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.93**	mg/L	0.10	1		03/23/13 12:13		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:13		
Nitrogen, NO2 plus NO3	**0.93**	mg/L	0.10	1		03/23/13 12:13		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6T-MW03-130322 **Lab ID: 60141077005** Collected: 03/22/13 11:45 Received: 03/23/13 11:05 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		03/26/13 13:00	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 13:00	74-85-1	
Methane	**6.8**	ug/L	6.6	1		03/26/13 13:00	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**7860**	ug/L	500	50	03/25/13 15:00	03/27/13 13:41	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**354000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:18	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:18	7439-89-6	
Magnesium, Dissolved	**350000**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:18	7439-95-4	
Potassium, Dissolved	**11000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:18	7440-09-7	
Sodium, Dissolved	**500000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:18	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:58	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 08:58	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 08:58	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	58	%	40-120	1	03/25/13 00:00	04/11/13 08:58	321-60-8	
Terphenyl-d14 (S)	73	%	43-122	1	03/25/13 00:00	04/11/13 08:58	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 03:51	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 03:51	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 03:51	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 03:51	1330-20-7	
Surrogates								
Toluene-d8 (S)	95	%	80-120	1		03/26/13 03:51	2037-26-5	
4-Bromofluorobenzene (S)	113	%	80-120	1		03/26/13 03:51	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	80-120	1		03/26/13 03:51	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 03:51		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6T-MW03-130322 **Lab ID: 60141077005** Collected: 03/22/13 11:45 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**524**	mg/L	20.0	1		03/26/13 11:50		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 11:50		
Alkalinity, Total as CaCO3	**524**	mg/L	20.0	1		03/26/13 11:50		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**4830**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:58	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.3**	mg/L	1.0	1		03/26/13 19:11	24959-67-9	
Chloride	**103**	mg/L	10.0	10		03/26/13 19:26	16887-00-6	
Sulfate	**2650**	mg/L	200	200		03/28/13 12:23	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/23/13 12:14		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:14		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/23/13 12:14		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6T-MW02-130322 **Lab ID: 60141077006** Collected: 03/22/13 12:07 Received: 03/23/13 11:05 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		03/26/13 13:10	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 13:10	74-85-1	
Methane	**7.6**	ug/L	6.6	1		03/26/13 13:10	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4520**	ug/L	500	50	03/25/13 15:00	03/27/13 13:43	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**238000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:20	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:20	7439-89-6	
Magnesium, Dissolved	**181000**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:20	7439-95-4	
Potassium, Dissolved	**7410**	ug/L	500	1	03/25/13 15:00	03/27/13 12:20	7440-09-7	
Sodium, Dissolved	**247000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:20	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 09:16	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 09:16	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 09:16	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	72	%	40-120	1	03/25/13 00:00	04/11/13 09:16	321-60-8	
Terphenyl-d14 (S)	100	%	43-122	1	03/25/13 00:00	04/11/13 09:16	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 04:06	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 04:06	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 04:06	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 04:06	1330-20-7	
Surrogates								
Toluene-d8 (S)	94	%	80-120	1		03/26/13 04:06	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		03/26/13 04:06	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	80-120	1		03/26/13 04:06	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 04:06		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: E6T-MW02-130322 **Lab ID: 60141077006** Collected: 03/22/13 12:07 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**346**	mg/L	20.0	1		03/26/13 11:55		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 11:55		
Alkalinity, Total as CaCO3	**346**	mg/L	20.0	1		03/26/13 11:55		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**2960**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:59	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.2**	mg/L	1.0	1		03/27/13 16:06	24959-67-9	
Chloride	**63.9**	mg/L	5.0	5		03/27/13 16:21	16887-00-6	
Sulfate	**1560**	mg/L	200	200		03/27/13 17:08	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/23/13 12:15		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:15		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/23/13 12:15		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: S31-MW02-130322 **Lab ID: 60141077007** Collected: 03/22/13 13:00 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175							
Ethane	**11.9**	ug/L	6.2	1		03/26/13 13:21	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 13:21	74-85-1	
Methane	**32.3**	ug/L	6.6	1		03/26/13 13:21	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**7990**	ug/L	1000	100	03/25/13 15:00	03/27/13 13:45	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**377000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:22	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:22	7439-89-6	
Magnesium, Dissolved	**872000**	ug/L	5000	100	03/25/13 15:00	03/27/13 12:39	7439-95-4	
Potassium, Dissolved	**18400**	ug/L	500	1	03/25/13 15:00	03/27/13 12:22	7440-09-7	
Sodium, Dissolved	**1940000**	ug/L	50000	100	03/25/13 15:00	03/27/13 12:39	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	193-39-5	
Naphthalene	**0.56**	ug/L	0.50	1	03/25/13 00:00	04/11/13 11:57	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 11:57	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 11:57	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	45	%	40-120	1	03/25/13 00:00	04/11/13 11:57	321-60-8	
Terphenyl-d14 (S)	282	%	43-122	1	03/25/13 00:00	04/11/13 11:57	1718-51-0	S0
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	**94.6**	ug/L	1.0	1		03/26/13 04:22	71-43-2	
Ethylbenzene	**23.2**	ug/L	1.0	1		03/26/13 04:22	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 04:22	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 04:22	1330-20-7	
Surrogates								
Toluene-d8 (S)	92	%	80-120	1		03/26/13 04:22	2037-26-5	
4-Bromofluorobenzene (S)	92	%	80-120	1		03/26/13 04:22	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	80-120	1		03/26/13 04:22	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 04:22		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: S31-MW02-130322 **Lab ID: 60141077007** Collected: 03/22/13 13:00 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**860**	mg/L	20.0	1		03/26/13 12:08		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 12:08		
Alkalinity, Total as CaCO3	**860**	mg/L	20.0	1		03/26/13 12:08		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**12500**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:59	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.5**	mg/L	1.0	1		03/27/13 17:23	24959-67-9	
Chloride	**150**	mg/L	10.0	10		03/28/13 11:21	16887-00-6	
Sulfate	**9110**	mg/L	1000	1000		03/27/13 17:54	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/23/13 12:16		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:16		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/23/13 12:16		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: S31-MW01-130322 **Lab ID: 60141077008** Collected: 03/22/13 13:08 Received: 03/23/13 11:05 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		03/26/13 13:58	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 13:58	74-85-1	
Methane	**13.7**	ug/L	6.6	1		03/26/13 13:58	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**9700**	ug/L	1000	100	03/25/13 15:00	03/27/13 13:47	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**365000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:24	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:24	7439-89-6	
Magnesium, Dissolved	**1400000**	ug/L	5000	100	03/25/13 15:00	03/27/13 12:46	7439-95-4	
Potassium, Dissolved	**26500**	ug/L	500	1	03/25/13 15:00	03/27/13 12:24	7440-09-7	
Sodium, Dissolved	**2850000**	ug/L	50000	100	03/25/13 15:00	03/27/13 12:46	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 12:16	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 12:16	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:16	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	34	%	40-120	1	03/25/13 00:00	04/11/13 12:16	321-60-8	S0
Terphenyl-d14 (S)	91	%	43-122	1	03/25/13 00:00	04/11/13 12:16	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 04:37	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 04:37	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 04:37	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 04:37	1330-20-7	
Surrogates								
Toluene-d8 (S)	93	%	80-120	1		03/26/13 04:37	2037-26-5	
4-Bromofluorobenzene (S)	105	%	80-120	1		03/26/13 04:37	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	80-120	1		03/26/13 04:37	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 04:37		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: S31-MW01-130322 **Lab ID: 60141077008** Collected: 03/22/13 13:08 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**606**	mg/L	20.0	1		03/26/13 12:15		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 12:15		
Alkalinity, Total as CaCO3	**606**	mg/L	20.0	1		03/26/13 12:15		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**17200**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:59	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**1.8**	mg/L	1.0	1		03/27/13 18:10	24959-67-9	
Chloride	**381**	mg/L	50.0	50		03/27/13 18:25	16887-00-6	
Sulfate	**13200**	mg/L	1000	1000		03/27/13 18:41	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**2.8**	mg/L	0.10	1		03/23/13 12:17		
Nitrogen, Nitrite	**0.32**	mg/L	0.10	1		03/23/13 12:17		
Nitrogen, NO2 plus NO3	**3.1**	mg/L	0.10	1		03/23/13 12:17		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: S31-MW04-130322 **Lab ID: 60141077009** Collected: 03/22/13 13:35 Received: 03/23/13 11:05 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		03/26/13 14:39	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 14:39	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 14:39	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**9550**	ug/L	1000	100	03/25/13 15:00	03/27/13 13:49	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**383000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:27	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:27	7439-89-6	
Magnesium, Dissolved	**759000**	ug/L	5000	100	03/25/13 15:00	03/27/13 12:48	7439-95-4	
Potassium, Dissolved	**19600**	ug/L	500	1	03/25/13 15:00	03/27/13 12:27	7440-09-7	
Sodium, Dissolved	**1380000**	ug/L	50000	100	03/25/13 15:00	03/27/13 12:48	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 12:34	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 12:34	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:34	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	60	%	40-120	1	03/25/13 00:00	04/11/13 12:34	321-60-8	
Terphenyl-d14 (S)	83	%	43-122	1	03/25/13 00:00	04/11/13 12:34	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 04:53	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 04:53	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 04:53	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 04:53	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%	80-120	1		03/26/13 04:53	2037-26-5	
4-Bromofluorobenzene (S)	105	%	80-120	1		03/26/13 04:53	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	80-120	1		03/26/13 04:53	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 04:53		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: S31-MW04-130322 **Lab ID: 60141077009** Collected: 03/22/13 13:35 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**480**	mg/L	20.0	1		03/26/13 12:20		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 12:20		
Alkalinity, Total as CaCO3	**480**	mg/L	20.0	1		03/26/13 12:20		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**9980**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 12:59	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	**4.4**	mg/L	1.0	1		03/26/13 11:10	24959-67-9	
Chloride	**85.2**	mg/L	10.0	10		03/27/13 21:32	16887-00-6	
Sulfate	**7180**	mg/L	500	500		03/27/13 21:47	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**1.9**	mg/L	0.10	1		03/23/13 12:17		
Nitrogen, Nitrite	**0.21**	mg/L	0.10	1		03/23/13 12:17		
Nitrogen, NO2 plus NO3	**2.1**	mg/L	0.10	1		03/23/13 12:17		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: LG8-MW01-130322 **Lab ID: 60141077010** Collected: 03/22/13 14:46 Received: 03/23/13 11:05 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		03/26/13 15:00	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 15:00	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 15:00	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**3030**	ug/L	100	10	03/25/13 15:00	03/27/13 13:51	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**74500**	ug/L	100	1	03/25/13 15:00	03/27/13 12:29	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:29	7439-89-6	
Magnesium, Dissolved	**79100**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:29	7439-95-4	
Potassium, Dissolved	**5870**	ug/L	500	1	03/25/13 15:00	03/27/13 12:29	7440-09-7	
Sodium, Dissolved	**106000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:29	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 12:52	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 12:52	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 12:52	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	39	%	40-120	1	03/25/13 00:00	04/11/13 12:52	321-60-8	S0
Terphenyl-d14 (S)	83	%	43-122	1	03/25/13 00:00	04/11/13 12:52	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 05:08	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 05:08	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 05:08	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 05:08	1330-20-7	
Surrogates								
Toluene-d8 (S)	97	%	80-120	1		03/26/13 05:08	2037-26-5	
4-Bromofluorobenzene (S)	106	%	80-120	1		03/26/13 05:08	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	80-120	1		03/26/13 05:08	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 05:08		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: LG8-MW01-130322 **Lab ID: 60141077010** Collected: 03/22/13 14:46 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**204**	mg/L	20.0	1		03/26/13 12:25		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 12:25		
Alkalinity, Total as CaCO3	**204**	mg/L	20.0	1		03/26/13 12:25		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1350**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 13:00	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/26/13 11:26	24959-67-9	
Chloride	**40.1**	mg/L	5.0	5		03/27/13 02:25	16887-00-6	
Sulfate	**496**	mg/L	100	100		03/27/13 02:41	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.23**	mg/L	0.10	1		03/23/13 12:18		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:18		
Nitrogen, NO2 plus NO3	**0.24**	mg/L	0.10	1		03/23/13 12:18		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: LG8-MW02-130322 **Lab ID: 60141077011** Collected: 03/22/13 15:05 Received: 03/23/13 11:05 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		03/26/13 15:11	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 15:11	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 15:11	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1970**	ug/L	100	10	03/25/13 15:00	03/27/13 13:53	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**85100**	ug/L	100	1	03/25/13 15:00	03/27/13 12:31	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:31	7439-89-6	
Magnesium, Dissolved	**88600**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:31	7439-95-4	
Potassium, Dissolved	**5390**	ug/L	500	1	03/25/13 15:00	03/27/13 12:31	7440-09-7	
Sodium, Dissolved	**131000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:31	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 13:10	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 13:10	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:10	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	70	%	40-120	1	03/25/13 00:00	04/11/13 13:10	321-60-8	
Terphenyl-d14 (S)	98	%	43-122	1	03/25/13 00:00	04/11/13 13:10	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 05:23	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 05:23	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 05:23	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 05:23	1330-20-7	
Surrogates								
Toluene-d8 (S)	93	%	80-120	1		03/26/13 05:23	2037-26-5	
4-Bromofluorobenzene (S)	102	%	80-120	1		03/26/13 05:23	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	80-120	1		03/26/13 05:23	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 05:23		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: LG8-MW02-130322 **Lab ID: 60141077011** Collected: 03/22/13 15:05 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**234**	mg/L	20.0	1		03/26/13 12:30		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 12:30		
Alkalinity, Total as CaCO3	**234**	mg/L	20.0	1		03/26/13 12:30		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1540**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 13:01	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/26/13 11:41	24959-67-9	
Chloride	**42.9**	mg/L	5.0	5		03/27/13 02:56	16887-00-6	
Sulfate	**548**	mg/L	100	100		03/27/13 03:12	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**0.28**	mg/L	0.10	1		03/23/13 12:19		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:19		
Nitrogen, NO2 plus NO3	**0.29**	mg/L	0.10	1		03/23/13 12:19		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: LG8-MW03-130322 **Lab ID: 60141077012** Collected: 03/22/13 15:10 Received: 03/23/13 11:05 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		03/26/13 15:21	74-84-0	
Ethene	ND	ug/L	6.2	1		03/26/13 15:21	74-85-1	
Methane	ND	ug/L	6.6	1		03/26/13 15:21	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**2870**	ug/L	100	10	03/25/13 15:00	03/27/13 13:55	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**87000**	ug/L	100	1	03/25/13 15:00	03/27/13 12:33	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:33	7439-89-6	
Magnesium, Dissolved	**94100**	ug/L	50.0	1	03/25/13 15:00	03/27/13 12:33	7439-95-4	
Potassium, Dissolved	**5650**	ug/L	500	1	03/25/13 15:00	03/27/13 12:33	7440-09-7	
Sodium, Dissolved	**122000**	ug/L	500	1	03/25/13 15:00	03/27/13 12:33	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 13:28	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	04/11/13 13:28	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	04/11/13 13:28	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	62	%	40-120	1	03/25/13 00:00	04/11/13 13:28	321-60-8	
Terphenyl-d14 (S)	89	%	43-122	1	03/25/13 00:00	04/11/13 13:28	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/26/13 05:39	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/26/13 05:39	100-41-4	
Toluene	ND	ug/L	1.0	1		03/26/13 05:39	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/26/13 05:39	1330-20-7	
Surrogates								
Toluene-d8 (S)	93	%	80-120	1		03/26/13 05:39	2037-26-5	
4-Bromofluorobenzene (S)	102	%	80-120	1		03/26/13 05:39	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	80-120	1		03/26/13 05:39	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/26/13 05:39		

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ANALYTICAL RESULTS

Project: O&G Wellsite
Pace Project No.: 60141077

Sample: LG8-MW03-130322 **Lab ID: 60141077012** Collected: 03/22/13 15:10 Received: 03/23/13 11:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**244**	mg/L	20.0	1		03/26/13 12:35		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/26/13 12:35		
Alkalinity, Total as CaCO3	**244**	mg/L	20.0	1		03/26/13 12:35		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1530**	umhos/cm	1.0	1		03/25/13 16:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/28/13 13:04	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/26/13 11:57	24959-67-9	
Chloride	**42.1**	mg/L	5.0	5		03/27/13 03:27	16887-00-6	
Sulfate	**530**	mg/L	100	100		03/27/13 03:43	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	ND	mg/L	0.10	1		03/23/13 12:20		
Nitrogen, Nitrite	ND	mg/L	0.10	1		03/23/13 12:20		
Nitrogen, NO2 plus NO3	ND	mg/L	0.10	1		03/23/13 12:20		

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: AIR/17008 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1397820 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	03/26/13 11:56	
Ethene	ug/L	ND	6.2	03/26/13 11:56	
Methane	ug/L	ND	6.6	03/26/13 11:56	

LABORATORY CONTROL SAMPLE & LCSD: 1397821 1397822

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	104	111	91	98	85-115	7	20	
Ethene	ug/L	106	97.1	104	91	98	85-115	7	20	
Methane	ug/L	60.7	59.5	62.2	98	102	85-115	4	20	

SAMPLE DUPLICATE: 1398188

Parameter	Units	60141077001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	14.1	13.3	5	20	

SAMPLE DUPLICATE: 1398273

Parameter	Units	60141077009 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	

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: MPRP/22005 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1159240 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	03/27/13 13:14	

LABORATORY CONTROL SAMPLE: 1159241

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1159242 1159243

Parameter	Units	60140981002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	1720	1000	1000	2770	27000	104	2526	75-125	163	20	M6,R1

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: MPRP/22001 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1159222 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	ND	100	03/27/13 11:46	
Iron, Dissolved	ug/L	ND	50.0	03/27/13 11:46	
Magnesium, Dissolved	ug/L	ND	50.0	03/27/13 11:46	
Potassium, Dissolved	ug/L	ND	500	03/27/13 11:46	
Sodium, Dissolved	ug/L	ND	500	03/27/13 11:46	

LABORATORY CONTROL SAMPLE: 1159223

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9640	96	80-120	
Iron, Dissolved	ug/L	10000	9740	97	80-120	
Magnesium, Dissolved	ug/L	10000	10000	100	80-120	
Potassium, Dissolved	ug/L	10000	9280	93	80-120	
Sodium, Dissolved	ug/L	10000	9720	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1159224 1159225

Parameter	Units	60140981001 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	88200	10000	10000	96900	97300	87	91	75-125	0	20	
Iron, Dissolved	ug/L	ND	10000	10000	9730	9650	97	96	75-125	1	20	
Magnesium, Dissolved	ug/L	49000	10000	10000	58200	57900	92	90	75-125	0	20	
Potassium, Dissolved	ug/L	3940	10000	10000	14100	14100	102	102	75-125	0	20	
Sodium, Dissolved	ug/L	47700	10000	10000	57800	58000	100	103	75-125	1	20	

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: MSV/52587 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1159330 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/26/13 02:34	
Ethylbenzene	ug/L	ND	1.0	03/26/13 02:34	
Toluene	ug/L	ND	1.0	03/26/13 02:34	
Xylene (Total)	ug/L	ND	3.0	03/26/13 02:34	
1,2-Dichloroethane-d4 (S)	%	107	80-120	03/26/13 02:34	
4-Bromofluorobenzene (S)	%	103	80-120	03/26/13 02:34	
Toluene-d8 (S)	%	95	80-120	03/26/13 02:34	

LABORATORY CONTROL SAMPLE: 1159331

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	19.8	99	73-122	
Ethylbenzene	ug/L	20	17.8	89	76-123	
Toluene	ug/L	20	17.6	88	76-122	
Xylene (Total)	ug/L	60	54.5	91	76-122	
1,2-Dichloroethane-d4 (S)	%			99	80-120	
4-Bromofluorobenzene (S)	%			98	80-120	
Toluene-d8 (S)	%			93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1159332 1159333

Parameter	Units	60141078001 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	21.0	19.3	103	95	48-150	8	31	
Ethylbenzene	ug/L	0.018 mg/L	20	20	34.2	34.7	83	86	50-147	1	31	
Toluene	ug/L	ND	20	20	19.1	18.9	92	91	51-147	1	32	
Xylene (Total)	ug/L	0.046 mg/L	60	60	96.9	95.7	84	82	49-145	1	31	
1,2-Dichloroethane-d4 (S)	%						101	100	80-120			
4-Bromofluorobenzene (S)	%						104	100	80-120			
Toluene-d8 (S)	%						92	94	80-120			
Preservation pH		1.0			1.0	1.0				0		

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: OEXT/37675 | Analysis Method: EPA 8270C by SIM
QC Batch Method: EPA 3510C | Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1159135 | Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.10	03/27/13 14:05	
Acenaphthylene	ug/L	ND	0.10	03/27/13 14:05	
Anthracene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(a)anthracene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(a)pyrene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(b)fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(g,h,i)perylene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(k)fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Chrysene	ug/L	ND	0.10	03/27/13 14:05	
Dibenz(a,h)anthracene	ug/L	ND	0.10	03/27/13 14:05	
Fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Fluorene	ug/L	ND	0.10	03/27/13 14:05	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.10	03/27/13 14:05	
Naphthalene	ug/L	ND	0.50	03/27/13 14:05	
Phenanthrene	ug/L	ND	0.50	03/27/13 14:05	
Pyrene	ug/L	ND	0.10	03/27/13 14:05	
2-Fluorobiphenyl (S)	%	69	40-120	03/27/13 14:05	
Terphenyl-d14 (S)	%	98	43-122	03/27/13 14:05	

LABORATORY CONTROL SAMPLE: 1159136

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/L	10	7.4	74	43-120	
Acenaphthylene	ug/L	10	7.6	76	40-120	
Anthracene	ug/L	10	7.7	77	41-120	
Benzo(a)anthracene	ug/L	10	8.3	83	34-137	
Benzo(a)pyrene	ug/L	10	9.2	92	25-133	
Benzo(b)fluoranthene	ug/L	10	9.4	94	30-131	
Benzo(g,h,i)perylene	ug/L	10	9.8	98	10-141	
Benzo(k)fluoranthene	ug/L	10	10.7	107	16-138	
Chrysene	ug/L	10	8.1	81	34-120	
Dibenz(a,h)anthracene	ug/L	10	11.0	110	10-144	
Fluoranthene	ug/L	10	7.8	78	47-126	
Fluorene	ug/L	10	7.5	75	44-120	
Indeno(1,2,3-cd)pyrene	ug/L	10	11.0	110	10-141	
Naphthalene	ug/L	10	7.4	74	41-120	
Phenanthrene	ug/L	10	7.0	70	44-120	
Pyrene	ug/L	10	9.3	93	41-120	
2-Fluorobiphenyl (S)	%			67	40-120	
Terphenyl-d14 (S)	%			88	43-122	

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: WET/40383 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1159179 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	03/26/13 09:26	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	03/26/13 09:26	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	03/26/13 09:26	

LABORATORY CONTROL SAMPLE: 1159180

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	506	101	90-110	

SAMPLE DUPLICATE: 1159183

Parameter	Units	60140981002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	359	371	3	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	359	371	3	10	

SAMPLE DUPLICATE: 1159184

Parameter	Units	60141077006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	346	352	2	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	346	352	2	10	

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: WET/40367 Analysis Method: SM 2510B
QC Batch Method: SM 2510B Analysis Description: 2510B Specific Conductance
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1159064 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	03/25/13 16:00	

SAMPLE DUPLICATE: 1159065

Parameter	Units	60141077001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	2280	2290	0	20	

SAMPLE DUPLICATE: 1159066

Parameter	Units	60141077011 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	1540	1540	0	20	

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: WET/40363 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

SAMPLE DUPLICATE: 1159047

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	7.9	0	5	H6

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: WET/40429 Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010

METHOD BLANK: 1160272 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Total	mg/L	ND	0.050	03/28/13 12:42	

LABORATORY CONTROL SAMPLE: 1160273

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.50	99	80-120	

MATRIX SPIKE SAMPLE: 1160912

Parameter	Units	60141043001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.054	11	75-125	M1

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: WET/40458 | Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D | Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60141077011, 60141077012

METHOD BLANK: 1160828 | Matrix: Water
Associated Lab Samples: 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Total	mg/L	ND	0.050	03/28/13 13:00	

LABORATORY CONTROL SAMPLE: 1160829

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.49	99	80-120	

MATRIX SPIKE SAMPLE: 1160830

Parameter	Units	60141077011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.44	89	75-125	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: WETA/24000 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1159192 Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	03/26/13 10:08	
Chloride	mg/L	ND	1.0	03/26/13 10:08	
Sulfate	mg/L	ND	1.0	03/26/13 10:08	

METHOD BLANK: 1160514 Matrix: Water
Associated Lab Samples: 60141077006, 60141077007, 60141077008, 60141077009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	03/27/13 15:19	
Chloride	mg/L	ND	1.0	03/27/13 15:19	
Sulfate	mg/L	ND	1.0	03/27/13 15:19	

METHOD BLANK: 1161086 Matrix: Water
Associated Lab Samples: 60141077005, 60141077007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/28/13 10:03	
Sulfate	mg/L	ND	1.0	03/28/13 10:03	

LABORATORY CONTROL SAMPLE: 1159193

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.1	102	90-110	
Chloride	mg/L	5	5.0	100	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

LABORATORY CONTROL SAMPLE: 1160515

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	5	5.0	101	90-110	
Chloride	mg/L	5	5.0	100	90-110	
Sulfate	mg/L	5	5.2	103	90-110	

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

LABORATORY CONTROL SAMPLE: 1161087

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1159194 1159195

Parameter	Units	60140420001 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	100	100	101	101	93	93	75-119	0	10	
Chloride	mg/L	277	100	100	383	380	106	103	64-118	1	12	
Sulfate	mg/L	128	100	100	227	225	99	97	61-119	1	10	

MATRIX SPIKE SAMPLE: 1159470

Parameter	Units	60140354001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Bromide	mg/L	ND	50	51.3	103	75-119	
Chloride	mg/L	56.9	50	101	89	64-118	
Sulfate	mg/L	82.9	50	124	82	61-119	

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QUALITY CONTROL DATA

Project: O&G Wellsite
Pace Project No.: 60141077

QC Batch: WETA/23988 | Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 | Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

METHOD BLANK: 1158886 | Matrix: Water
Associated Lab Samples: 60141077001, 60141077002, 60141077003, 60141077004, 60141077005, 60141077006, 60141077007, 60141077008, 60141077009, 60141077010, 60141077011, 60141077012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	03/23/13 12:04	
Nitrogen, Nitrite	mg/L	ND	0.10	03/23/13 12:04	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	03/23/13 12:04	

LABORATORY CONTROL SAMPLE: 1158887

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.7	109	90-110	
Nitrogen, Nitrite	mg/L	.4	0.41	103	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.1	107	90-110	

MATRIX SPIKE SAMPLE: 1158888

Parameter	Units	60141077001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.11	1.6	1.8	109	90-110	
Nitrogen, Nitrite	mg/L	ND	.4	0.43	104	90-110	
Nitrogen, NO2 plus NO3	mg/L	0.12	2	2.3	108	90-110	

MATRIX SPIKE SAMPLE: 1158890

Parameter	Units	60141077003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.44	1.6	2.3	115	90-110	M1
Nitrogen, Nitrite	mg/L	ND	.4	0.46	114	90-110	M1
Nitrogen, NO2 plus NO3	mg/L	0.44	2	2.7	115	90-110	M1

SAMPLE DUPLICATE: 1158889

Parameter	Units	60141077002 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	ND	ND		15	
Nitrogen, Nitrite	mg/L	ND	ND		31	
Nitrogen, NO2 plus NO3	mg/L	ND	ND		13	

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QUALIFIERS

Project: O&G Wellsite
Pace Project No.: 60141077

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.
PRL - Pace Reporting 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: OEXT/37675

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

Batch: MSV/52587

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

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA recommended holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60141077001	**E6W-MW03-130322**	RSK 175	AIR/17008		
60141077002	**E6W-MW02-130322**	RSK 175	AIR/17008		
60141077003	**E6W-MW01-130322**	RSK 175	AIR/17008		
60141077004	**E6T-MW01-130322**	RSK 175	AIR/17008		
60141077005	**E6T-MW03-130322**	RSK 175	AIR/17008		
60141077006	**E6T-MW02-130322**	RSK 175	AIR/17008		
60141077007	**S31-MW02-130322**	RSK 175	AIR/17008		
60141077008	**S31-MW01-130322**	RSK 175	AIR/17008		
60141077009	**S31-MW04-130322**	RSK 175	AIR/17008		
60141077010	**LG8-MW01-130322**	RSK 175	AIR/17008		
60141077011	**LG8-MW02-130322**	RSK 175	AIR/17008		
60141077012	**LG8-MW03-130322**	RSK 175	AIR/17008		
60141077001	**E6W-MW03-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077002	**E6W-MW02-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077003	**E6W-MW01-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077004	**E6T-MW01-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077005	**E6T-MW03-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077006	**E6T-MW02-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077007	**S31-MW02-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077008	**S31-MW01-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077009	**S31-MW04-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077010	**LG8-MW01-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077011	**LG8-MW02-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077012	**LG8-MW03-130322**	EPA 3010	MPRP/22005	EPA 6010	ICP/17570
60141077001	**E6W-MW03-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077002	**E6W-MW02-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077003	**E6W-MW01-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077004	**E6T-MW01-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077005	**E6T-MW03-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077006	**E6T-MW02-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077007	**S31-MW02-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077008	**S31-MW01-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077009	**S31-MW04-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077010	**LG8-MW01-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077011	**LG8-MW02-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077012	**LG8-MW03-130322**	EPA 3010	MPRP/22001	EPA 6010	ICP/17568
60141077001	**E6W-MW03-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077002	**E6W-MW02-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077003	**E6W-MW01-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077004	**E6T-MW01-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077005	**E6T-MW03-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077006	**E6T-MW02-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077007	**S31-MW02-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077008	**S31-MW01-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077009	**S31-MW04-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077010	**LG8-MW01-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077011	**LG8-MW02-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60141077012	**LG8-MW03-130322**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60141077001	**E6W-MW03-130322**	EPA 8260	MSV/52587		
60141077002	**E6W-MW02-130322**	EPA 8260	MSV/52587		
60141077003	**E6W-MW01-130322**	EPA 8260	MSV/52587		
60141077004	**E6T-MW01-130322**	EPA 8260	MSV/52587		
60141077005	**E6T-MW03-130322**	EPA 8260	MSV/52587		
60141077006	**E6T-MW02-130322**	EPA 8260	MSV/52587		
60141077007	**S31-MW02-130322**	EPA 8260	MSV/52587		
60141077008	**S31-MW01-130322**	EPA 8260	MSV/52587		
60141077009	**S31-MW04-130322**	EPA 8260	MSV/52587		
60141077010	**LG8-MW01-130322**	EPA 8260	MSV/52587		
60141077011	**LG8-MW02-130322**	EPA 8260	MSV/52587		
60141077012	**LG8-MW03-130322**	EPA 8260	MSV/52587		
60141077001	**E6W-MW03-130322**	SM 2320B	WET/40383		
60141077002	**E6W-MW02-130322**	SM 2320B	WET/40383		
60141077003	**E6W-MW01-130322**	SM 2320B	WET/40383		
60141077004	**E6T-MW01-130322**	SM 2320B	WET/40383		
60141077005	**E6T-MW03-130322**	SM 2320B	WET/40383		
60141077006	**E6T-MW02-130322**	SM 2320B	WET/40383		
60141077007	**S31-MW02-130322**	SM 2320B	WET/40383		
60141077008	**S31-MW01-130322**	SM 2320B	WET/40383		
60141077009	**S31-MW04-130322**	SM 2320B	WET/40383		
60141077010	**LG8-MW01-130322**	SM 2320B	WET/40383		
60141077011	**LG8-MW02-130322**	SM 2320B	WET/40383		
60141077012	**LG8-MW03-130322**	SM 2320B	WET/40383		
60141077001	**E6W-MW03-130322**	SM 2510B	WET/40367		
60141077002	**E6W-MW02-130322**	SM 2510B	WET/40367		
60141077003	**E6W-MW01-130322**	SM 2510B	WET/40367		
60141077004	**E6T-MW01-130322**	SM 2510B	WET/40367		
60141077005	**E6T-MW03-130322**	SM 2510B	WET/40367		
60141077006	**E6T-MW02-130322**	SM 2510B	WET/40367		
60141077007	**S31-MW02-130322**	SM 2510B	WET/40367		
60141077008	**S31-MW01-130322**	SM 2510B	WET/40367		
60141077009	**S31-MW04-130322**	SM 2510B	WET/40367		
60141077010	**LG8-MW01-130322**	SM 2510B	WET/40367		
60141077011	**LG8-MW02-130322**	SM 2510B	WET/40367		
60141077012	**LG8-MW03-130322**	SM 2510B	WET/40367		
60141077001	**E6W-MW03-130322**	SM 4500-H+B	WET/40363		
60141077002	**E6W-MW02-130322**	SM 4500-H+B	WET/40363		
60141077003	**E6W-MW01-130322**	SM 4500-H+B	WET/40363		
60141077004	**E6T-MW01-130322**	SM 4500-H+B	WET/40363		
60141077005	**E6T-MW03-130322**	SM 4500-H+B	WET/40363		
60141077006	**E6T-MW02-130322**	SM 4500-H+B	WET/40363		
60141077007	**S31-MW02-130322**	SM 4500-H+B	WET/40363		
60141077008	**S31-MW01-130322**	SM 4500-H+B	WET/40363		
60141077009	**S31-MW04-130322**	SM 4500-H+B	WET/40363		
60141077010	**LG8-MW01-130322**	SM 4500-H+B	WET/40363		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G Wellsite
Pace Project No.: 60141077

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60141077011	**LG8-MW02-130322**	SM 4500-H+B	WET/40363		
60141077012	**LG8-MW03-130322**	SM 4500-H+B	WET/40363		
60141077001	**E6W-MW03-130322**	SM 4500-S-2 D	WET/40429		
60141077002	**E6W-MW02-130322**	SM 4500-S-2 D	WET/40429		
60141077003	**E6W-MW01-130322**	SM 4500-S-2 D	WET/40429		
60141077004	**E6T-MW01-130322**	SM 4500-S-2 D	WET/40429		
60141077005	**E6T-MW03-130322**	SM 4500-S-2 D	WET/40429		
60141077006	**E6T-MW02-130322**	SM 4500-S-2 D	WET/40429		
60141077007	**S31-MW02-130322**	SM 4500-S-2 D	WET/40429		
60141077008	**S31-MW01-130322**	SM 4500-S-2 D	WET/40429		
60141077009	**S31-MW04-130322**	SM 4500-S-2 D	WET/40429		
60141077010	**LG8-MW01-130322**	SM 4500-S-2 D	WET/40429		
60141077011	**LG8-MW02-130322**	SM 4500-S-2 D	WET/40458		
60141077012	**LG8-MW03-130322**	SM 4500-S-2 D	WET/40458		
60141077001	**E6W-MW03-130322**	EPA 300.0	WETA/24000		
60141077002	**E6W-MW02-130322**	EPA 300.0	WETA/24000		
60141077003	**E6W-MW01-130322**	EPA 300.0	WETA/24000		
60141077004	**E6T-MW01-130322**	EPA 300.0	WETA/24000		
60141077005	**E6T-MW03-130322**	EPA 300.0	WETA/24000		
60141077006	**E6T-MW02-130322**	EPA 300.0	WETA/24000		
60141077007	**S31-MW02-130322**	EPA 300.0	WETA/24000		
60141077008	**S31-MW01-130322**	EPA 300.0	WETA/24000		
60141077009	**S31-MW04-130322**	EPA 300.0	WETA/24000		
60141077010	**LG8-MW01-130322**	EPA 300.0	WETA/24000		
60141077011	**LG8-MW02-130322**	EPA 300.0	WETA/24000		
60141077012	**LG8-MW03-130322**	EPA 300.0	WETA/24000		
60141077001	**E6W-MW03-130322**	EPA 353.2	WETA/23988		
60141077002	**E6W-MW02-130322**	EPA 353.2	WETA/23988		
60141077003	**E6W-MW01-130322**	EPA 353.2	WETA/23988		
60141077004	**E6T-MW01-130322**	EPA 353.2	WETA/23988		
60141077005	**E6T-MW03-130322**	EPA 353.2	WETA/23988		
60141077006	**E6T-MW02-130322**	EPA 353.2	WETA/23988		
60141077007	**S31-MW02-130322**	EPA 353.2	WETA/23988		
60141077008	**S31-MW01-130322**	EPA 353.2	WETA/23988		
60141077009	**S31-MW04-130322**	EPA 353.2	WETA/23988		
60141077010	**LG8-MW01-130322**	EPA 353.2	WETA/23988		
60141077011	**LG8-MW02-130322**	EPA 353.2	WETA/23988		
60141077012	**LG8-MW03-130322**	EPA 353.2	WETA/23988		

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Sample Condition Upon Receipt

WO#: 60141077

60141077

Optional
Proj Due Date:
Proj Name:

Client Name: Terracon

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

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-112 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 2.2, 4.2, 1.0

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 3/23/13 BA

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 pH
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: Includes date/time/ID/analyses Matrix: WT	☑Yes ☐No ☐N/A	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: Pace Trip Blank lot # (if purchased): _____	☐Yes ☑No ☐N/A	15.
Headspace in VOA vials (>6mm):	☑Yes ☐No ☐N/A	16. 1of3 E6T-MW01-130322 headspace.
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: [signature] Date: 3/25/13

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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: of

1680457

Section A Required Client Information:

Company: TERRACON
Address: 10625 W 170 TH N. WHEAT RIDGE, CO 80033
Email To: JPANSTEY@TERRACON.COM
Phone: 303 423 3300 Fax: 303 423 3353
Requested Due Date/TAT:

Section B Required Project Information:

Report To: JON ANSTEY
Copy To:
Purchase Order No.:
Project Name: CITY OF LONGMONT
Project Number: 25127127

Section C Invoice Information:

Attention: JON ANSTEY
Company Name: TERRACON
Address: 10625 W 170 TH N
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE:

Section D Required Client Information

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

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

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	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) BTEX 8260D	RSK-175	Minors/Alkal/Cond	Metals (Diss)	Metals (Total) SM 4500 SO4	PAH/DRO/GRO	STRONTIUM				Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60141077
1	EGW-MW03-130322	WT	G			3/22/13	935		27			1	3	1				X	X	X	X	X	X	X	18P34	18P24	18P3	1-5	2AG4U 3DG4U 3VG4U 18P32 01
2	EGW-MW02-130322						957																						02
3	EGW-MW01-130322						1020																						03
4	EGT-MW01-130322						1115																						04
5	EGT-MW03-130322						1145																						05
6	EGT-MW02-130322						1207																						06
7	S31-MW02-130322						1300																						07
8	S31-MW01-130322						1308																						08
9	S31-MW04-130322						1335																						09
10	LG8-MW01-130322						1446																						010
11	LG8-MW02-130322						1505																						011
12	LG8-MW03-130322						1510																						012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	JOSEPH WILEY / TERRACON	3/22/13	1615	[signature]	3/22/13	1615				
				[signature]	3/23/13	1105	2.2	Y	Y	Y
							4.2	Y	Y	Y
							1.0	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: JOSEPH WILEY

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 3/22/13

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.

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April 12, 2013

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

RE: Project: O&G WELLSITE GW — Revised Report 4/12/13_rev.1
Pace Project No.: 60140850 — Corrected sample IDs on 60140850001, -003, & -004

Dear Jon Anstey:
Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2013. 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 M. Wilson

Heather Wilson

heather.wilson@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
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 #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Kansas Certification IDs
9608 Loiret Boulevard, Lenexa, KS 66219
A2LA Certification #: 2456.01
Arkansas Certification #: 12-019-0
Illinois Certification #: 002885
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-12-3
Utah Certification #: KS000212012-2
Illinois Certification #: 003097

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SAMPLE SUMMARY

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60140850001	**PL1-MW1-130320**	Water	03/20/13 12:57	03/21/13 08:30
60140850002	**SGU-MW1-130320**	Water	03/20/13 13:55	03/21/13 08:30
60140850003	**CL1-MW1-130320**	Water	03/20/13 15:19	03/21/13 08:30
60140850004	**CL1-MW2-130320**	Water	03/20/13 16:00	03/21/13 08:30

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SAMPLE ANALYTE COUNT

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60140850001	**PL1-MW1-130320**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP, TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140850002	**SGU-MW1-130320**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP, TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140850003	**CL1-MW1-130320**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP, TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K
60140850004	**CL1-MW2-130320**	RSK 175	SK4	3	PASI-M
		EPA 6010	JGP	1	PASI-K
		EPA 6010	JGP, TDS	5	PASI-K
		EPA 8270C by SIM	JMT	18	PASI-K

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SAMPLE ANALYTE COUNT

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	JTK	8	PASI-K
		SM 2320B	DJR	3	PASI-K
		SM 2510B	NDL	1	PASI-K
		SM 4500-H+B	NDL	1	PASI-K
		SM 4500-S-2 D	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
		EPA 353.2	DJR	3	PASI-K

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: PL1-MW1-130320 **Lab ID: 60140850001** Collected: 03/20/13 12:57 Received: 03/21/13 08:30 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		03/23/13 11:22	74-84-0	
Ethene	ND	ug/L	6.2	1		03/23/13 11:22	74-85-1	
Methane	ND	ug/L	6.6	1		03/23/13 11:22	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**1820**	ug/L	10.0	1	03/21/13 15:30	03/25/13 16:35	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**95300**	ug/L	100	1	03/22/13 15:30	03/26/13 19:22	7440-70-2	M1
Iron, Dissolved	ND	ug/L	50.0	1	03/22/13 15:30	03/26/13 19:22	7439-89-6	
Magnesium, Dissolved	**73200**	ug/L	50.0	1	03/22/13 15:30	03/26/13 14:18	7439-95-4	M1
Potassium, Dissolved	**2280**	ug/L	500	1	03/22/13 15:30	03/26/13 19:22	7440-09-7	
Sodium, Dissolved	**65300**	ug/L	500	1	03/22/13 15:30	03/26/13 19:22	7440-23-5	M1
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 14:49	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 14:49	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 14:49	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	54	%	40-120	1	03/25/13 00:00	03/27/13 14:49	321-60-8	
Terphenyl-d14 (S)	84	%	43-122	1	03/25/13 00:00	03/27/13 14:49	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 17:43	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 17:43	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 17:43	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 17:43	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	80-120	1		03/21/13 17:43	2037-26-5	
4-Bromofluorobenzene (S)	114	%	80-120	1		03/21/13 17:43	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-120	1		03/21/13 17:43	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/21/13 17:43		

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: PL1-MW1-130320 **Lab ID: 60140850001** Collected: 03/20/13 12:57 Received: 03/21/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**295**	mg/L	20.0	1		03/22/13 07:16		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/22/13 07:16		
Alkalinity, Total as CaCO3	**295**	mg/L	20.0	1		03/22/13 07:16		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1280**	umhos/cm	1.0	1		03/25/13 15:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.9**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/26/13 02:33	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/22/13 16:15	24959-67-9	
Chloride	**31.8**	mg/L	5.0	5		03/23/13 18:31	16887-00-6	
Sulfate	**369**	mg/L	20.0	20		03/23/13 18:47	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**5.9**	mg/L	0.20	2		03/22/13 09:13		
Nitrogen, Nitrite	ND	mg/L	0.20	2		03/22/13 09:13		
Nitrogen, NO2 plus NO3	**5.9**	mg/L	0.20	2		03/22/13 09:13		

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: SGU-MW1-130320 **Lab ID: 60140850002** Collected: 03/20/13 13:55 Received: 03/21/13 08:30 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		03/23/13 11:43	74-84-0	
Ethene	ND	ug/L	6.2	1		03/23/13 11:43	74-85-1	
Methane	ND	ug/L	6.6	1		03/23/13 11:43	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**2960**	ug/L	10.0	1	03/21/13 15:30	03/25/13 16:45	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**81400**	ug/L	100	1	03/22/13 15:30	03/26/13 19:27	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/22/13 15:30	03/26/13 19:27	7439-89-6	
Magnesium, Dissolved	**53700**	ug/L	50.0	1	03/22/13 15:30	03/26/13 14:28	7439-95-4	
Potassium, Dissolved	**3590**	ug/L	500	1	03/22/13 15:30	03/26/13 19:27	7440-09-7	
Sodium, Dissolved	**67200**	ug/L	500	1	03/22/13 15:30	03/26/13 19:27	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 15:10	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 15:10	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:10	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	67	%	40-120	1	03/25/13 00:00	03/27/13 15:10	321-60-8	
Terphenyl-d14 (S)	88	%	43-122	1	03/25/13 00:00	03/27/13 15:10	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 17:59	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 17:59	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 17:59	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 17:59	1330-20-7	
Surrogates								
Toluene-d8 (S)	100	%	80-120	1		03/21/13 17:59	2037-26-5	
4-Bromofluorobenzene (S)	102	%	80-120	1		03/21/13 17:59	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	80-120	1		03/21/13 17:59	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/21/13 17:59		

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: SGU-MW1-130320 **Lab ID: 60140850002** Collected: 03/20/13 13:55 Received: 03/21/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**328**	mg/L	20.0	1		03/22/13 07:25		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/22/13 07:25		
Alkalinity, Total as CaCO3	**328**	mg/L	20.0	1		03/22/13 07:25		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1060**	umhos/cm	1.0	1		03/25/13 15:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/26/13 02:33	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/22/13 17:02	24959-67-9	
Chloride	**29.8**	mg/L	5.0	5		03/23/13 19:02	16887-00-6	
Sulfate	**191**	mg/L	20.0	20		03/23/13 19:18	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**5.9**	mg/L	0.20	2		03/22/13 09:15		
Nitrogen, Nitrite	ND	mg/L	0.20	2		03/22/13 09:15		
Nitrogen, NO2 plus NO3	**5.9**	mg/L	0.20	2		03/22/13 09:15		

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: CL1-MW1-130320 **Lab ID: 60140850003** Collected: 03/20/13 15:19 Received: 03/21/13 08:30 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		03/23/13 12:04	74-84-0	
Ethene	ND	ug/L	6.2	1		03/23/13 12:04	74-85-1	
Methane	ND	ug/L	6.6	1		03/23/13 12:04	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**2380**	ug/L	10.0	1	03/21/13 15:30	03/25/13 16:47	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**81300**	ug/L	100	1	03/22/13 15:30	03/26/13 19:29	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/22/13 15:30	03/26/13 19:29	7439-89-6	
Magnesium, Dissolved	**72200**	ug/L	50.0	1	03/22/13 15:30	03/26/13 14:31	7439-95-4	
Potassium, Dissolved	**2830**	ug/L	500	1	03/22/13 15:30	03/26/13 19:29	7440-09-7	
Sodium, Dissolved	**61700**	ug/L	500	1	03/22/13 15:30	03/26/13 19:29	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	03/28/13 09:57	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	03/28/13 09:57	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/28/13 09:57	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	50	%	40-120	1	03/25/13 00:00	03/28/13 09:57	321-60-8	
Terphenyl-d14 (S)	88	%	43-122	1	03/25/13 00:00	03/28/13 09:57	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 18:14	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 18:14	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 18:14	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 18:14	1330-20-7	
Surrogates								
Toluene-d8 (S)	99	%	80-120	1		03/21/13 18:14	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		03/21/13 18:14	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	80-120	1		03/21/13 18:14	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/21/13 18:14		

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: CL1-MW1-130320 **Lab ID: 60140850003** Collected: 03/20/13 15:19 Received: 03/21/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**377**	mg/L	20.0	1		03/22/13 07:31		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/22/13 07:31		
Alkalinity, Total as CaCO3	**377**	mg/L	20.0	1		03/22/13 07:31		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1160**	umhos/cm	1.0	1		03/25/13 15:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.9**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/26/13 02:34	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/22/13 17:17	24959-67-9	
Chloride	**34.1**	mg/L	5.0	5		03/23/13 19:33	16887-00-6	
Sulfate	**182**	mg/L	20.0	20		03/23/13 20:20	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**13.9**	mg/L	0.50	5		03/22/13 09:26		
Nitrogen, Nitrite	ND	mg/L	0.50	5		03/22/13 09:26		
Nitrogen, NO2 plus NO3	**13.9**	mg/L	0.50	5		03/22/13 09:26		

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: CL1-MW2-130320 **Lab ID: 60140850004** Collected: 03/20/13 16:00 Received: 03/21/13 08:30 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		03/23/13 12:15	74-84-0	
Ethene	ND	ug/L	6.2	1		03/23/13 12:15	74-85-1	
Methane	ND	ug/L	6.6	1		03/23/13 12:15	74-82-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Strontium	**4260**	ug/L	10.0	1	03/21/13 15:30	03/25/13 16:49	7440-24-6	
6010 MET ICP, Dissolved (LF)	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Calcium, Dissolved	**77000**	ug/L	100	1	03/22/13 15:30	03/26/13 19:31	7440-70-2	
Iron, Dissolved	ND	ug/L	50.0	1	03/22/13 15:30	03/26/13 19:31	7439-89-6	
Magnesium, Dissolved	**67400**	ug/L	50.0	1	03/22/13 15:30	03/26/13 14:33	7439-95-4	
Potassium, Dissolved	**2100**	ug/L	500	1	03/22/13 15:30	03/26/13 19:31	7440-09-7	
Sodium, Dissolved	**60400**	ug/L	500	1	03/22/13 15:30	03/26/13 19:31	7440-23-5	
8270 MSSV PAH by SIM	Analytical Method: EPA 8270C by SIM Preparation Method: EPA 3510C							
Acenaphthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	83-32-9	
Acenaphthylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	208-96-8	
Anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	120-12-7	
Benzo(a)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	56-55-3	
Benzo(a)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	207-08-9	
Chrysene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	53-70-3	
Fluoranthene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	206-44-0	
Fluorene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	193-39-5	
Naphthalene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 15:54	91-20-3	
Phenanthrene	ND	ug/L	0.50	1	03/25/13 00:00	03/27/13 15:54	85-01-8	
Pyrene	ND	ug/L	0.10	1	03/25/13 00:00	03/27/13 15:54	129-00-0	
Surrogates								
2-Fluorobiphenyl (S)	63	%	40-120	1	03/25/13 00:00	03/27/13 15:54	321-60-8	
Terphenyl-d14 (S)	86	%	43-122	1	03/25/13 00:00	03/27/13 15:54	1718-51-0	
8260 MSV GRO and Oxygenates	Analytical Method: EPA 8260							
Benzene	ND	ug/L	1.0	1		03/21/13 18:30	71-43-2	
Ethylbenzene	ND	ug/L	1.0	1		03/21/13 18:30	100-41-4	
Toluene	ND	ug/L	1.0	1		03/21/13 18:30	108-88-3	
Xylene (Total)	ND	ug/L	3.0	1		03/21/13 18:30	1330-20-7	
Surrogates								
Toluene-d8 (S)	103	%	80-120	1		03/21/13 18:30	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		03/21/13 18:30	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	80-120	1		03/21/13 18:30	17060-07-0	
Preservation pH	**1.0**		0.10	1		03/21/13 18:30		

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ANALYTICAL RESULTS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Sample: CL1-MW2-130320 **Lab ID: 60140850004** Collected: 03/20/13 16:00 Received: 03/21/13 08:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity,Bicarbonate (CaCO3)	**354**	mg/L	20.0	1		03/22/13 07:36		
Alkalinity, Carbonate (CaCO3)	ND	mg/L	20.0	1		03/22/13 07:36		
Alkalinity, Total as CaCO3	**354**	mg/L	20.0	1		03/22/13 07:36		
2510B Specific Conductance	Analytical Method: SM 2510B							
Specific Conductance	**1090**	umhos/cm	1.0	1		03/25/13 15:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.9**	Std. Units	0.10	1		03/26/13 15:30		H6
4500S2D Sulfide, Total	Analytical Method: SM 4500-S-2 D							
Sulfide, Total	ND	mg/L	0.050	1		03/26/13 02:34	18496-25-8	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Bromide	ND	mg/L	1.0	1		03/22/13 17:33	24959-67-9	
Chloride	**32.7**	mg/L	5.0	5		03/23/13 20:35	16887-00-6	
Sulfate	**171**	mg/L	20.0	20		03/23/13 20:51	14808-79-8	
353.2 Nitrogen, NO2/NO3 unpres	Analytical Method: EPA 353.2							
Nitrogen, Nitrate	**2.6**	mg/L	0.20	2		03/22/13 09:23		
Nitrogen, Nitrite	ND	mg/L	0.20	2		03/22/13 09:23		
Nitrogen, NO2 plus NO3	**2.6**	mg/L	0.20	2		03/22/13 09:23		

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: AIR/16998 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1397158 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethane	ug/L	ND	6.2	03/23/13 10:47	
Ethene	ug/L	ND	6.2	03/23/13 10:47	
Methane	ug/L	ND	6.6	03/23/13 10:47	

LABORATORY CONTROL SAMPLE & LCSD: 1397159 1397160

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Ethane	ug/L	114	100	114	88	100	85-115	13	20	
Ethene	ug/L	106	93.2	106	88	100	85-115	13	20	
Methane	ug/L	60.7	57.7	62.9	95	104	85-115	9	20	

SAMPLE DUPLICATE: 1397175

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	.96J		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	5.4J		20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: MPRP/21962 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1157483 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Strontium	ug/L	ND	10.0	03/25/13 16:31	

LABORATORY CONTROL SAMPLE: 1157484

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Strontium	ug/L	1000	992	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1157485 1157486

Parameter	Units	60140850001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Strontium	ug/L	1820	1000	1000	2820	2770	99	95	75-125	2	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: MPRP/21981 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1158428 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium, Dissolved	ug/L	107	100	03/26/13 19:13	
Iron, Dissolved	ug/L	ND	50.0	03/26/13 19:13	
Magnesium, Dissolved	ug/L	ND	50.0	03/26/13 14:16	
Potassium, Dissolved	ug/L	ND	500	03/26/13 19:13	
Sodium, Dissolved	ug/L	ND	500	03/26/13 19:13	

LABORATORY CONTROL SAMPLE: 1158429

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium, Dissolved	ug/L	10000	9500	95	80-120	
Iron, Dissolved	ug/L	10000	9130	91	80-120	
Magnesium, Dissolved	ug/L	10000	10200	102	80-120	
Potassium, Dissolved	ug/L	10000	9740	97	80-120	
Sodium, Dissolved	ug/L	10000	10300	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1158430 1158431

Parameter	Units	60140850001 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	95300	10000	10000	107000	111000	113	155	75-125	4	20	M1
Iron, Dissolved	ug/L	ND	10000	10000	8770	9010	88	90	75-125	3	20	
Magnesium, Dissolved	ug/L	73200	10000	10000	82800	87100	95	139	75-125	5	20	M1
Potassium, Dissolved	ug/L	2280	10000	10000	12000	12300	97	100	75-125	3	20	
Sodium, Dissolved	ug/L	65300	10000	10000	77200	79300	118	140	75-125	3	20	M1

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: MSV/52518 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV MO GRO Oxygenates
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1157700 | Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	03/21/13 16:57	
Ethylbenzene	ug/L	ND	1.0	03/21/13 16:57	
Toluene	ug/L	ND	1.0	03/21/13 16:57	
Xylene (Total)	ug/L	ND	3.0	03/21/13 16:57	
1,2-Dichloroethane-d4 (S)	%	102	80-120	03/21/13 16:57	
4-Bromofluorobenzene (S)	%	101	80-120	03/21/13 16:57	
Toluene-d8 (S)	%	108	80-120	03/21/13 16:57	

LABORATORY CONTROL SAMPLE: 1157701

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	19.1	95	73-122	
Ethylbenzene	ug/L	20	18.6	93	76-123	
Toluene	ug/L	20	18.9	94	76-122	
Xylene (Total)	ug/L	60	55.7	93	76-122	
1,2-Dichloroethane-d4 (S)	%			102	80-120	
4-Bromofluorobenzene (S)	%			104	80-120	
Toluene-d8 (S)	%			98	80-120	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: OEXT/37675 | Analysis Method: EPA 8270C by SIM
QC Batch Method: EPA 3510C | Analysis Description: 8270 Water PAH by SIM MSSV
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1159135 | Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/L	ND	0.10	03/27/13 14:05	
Acenaphthylene	ug/L	ND	0.10	03/27/13 14:05	
Anthracene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(a)anthracene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(a)pyrene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(b)fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(g,h,i)perylene	ug/L	ND	0.10	03/27/13 14:05	
Benzo(k)fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Chrysene	ug/L	ND	0.10	03/27/13 14:05	
Dibenz(a,h)anthracene	ug/L	ND	0.10	03/27/13 14:05	
Fluoranthene	ug/L	ND	0.10	03/27/13 14:05	
Fluorene	ug/L	ND	0.10	03/27/13 14:05	
Indeno(1,2,3-cd)pyrene	ug/L	ND	0.10	03/27/13 14:05	
Naphthalene	ug/L	ND	0.50	03/27/13 14:05	
Phenanthrene	ug/L	ND	0.50	03/27/13 14:05	
Pyrene	ug/L	ND	0.10	03/27/13 14:05	
2-Fluorobiphenyl (S)	%	69	40-120	03/27/13 14:05	
Terphenyl-d14 (S)	%	98	43-122	03/27/13 14:05	

LABORATORY CONTROL SAMPLE: 1159136

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/L	10	7.4	74	43-120	
Acenaphthylene	ug/L	10	7.6	76	40-120	
Anthracene	ug/L	10	7.7	77	41-120	
Benzo(a)anthracene	ug/L	10	8.3	83	34-137	
Benzo(a)pyrene	ug/L	10	9.2	92	25-133	
Benzo(b)fluoranthene	ug/L	10	9.4	94	30-131	
Benzo(g,h,i)perylene	ug/L	10	9.8	98	10-141	
Benzo(k)fluoranthene	ug/L	10	10.7	107	16-138	
Chrysene	ug/L	10	8.1	81	34-120	
Dibenz(a,h)anthracene	ug/L	10	11.0	110	10-144	
Fluoranthene	ug/L	10	7.8	78	47-126	
Fluorene	ug/L	10	7.5	75	44-120	
Indeno(1,2,3-cd)pyrene	ug/L	10	11.0	110	10-141	
Naphthalene	ug/L	10	7.4	74	41-120	
Phenanthrene	ug/L	10	7.0	70	44-120	
Pyrene	ug/L	10	9.3	93	41-120	
2-Fluorobiphenyl (S)	%			67	40-120	
Terphenyl-d14 (S)	%			88	43-122	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: WET/40334 — Analysis Method: SM 2320B
QC Batch Method: SM 2320B — Analysis Description: 2320B Alkalinity
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1157924 — Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	20.0	03/22/13 07:11	
Alkalinity, Total as CaCO3	mg/L	ND	20.0	03/22/13 07:11	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	20.0	03/22/13 07:11	

LABORATORY CONTROL SAMPLE: 1157925

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	491	98	90-110	

SAMPLE DUPLICATE: 1157926

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	295	288	2	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	295	288	2	10	

SAMPLE DUPLICATE: 1157927

Parameter	Units	60140483003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Carbonate (CaCO3)	mg/L	ND	ND		10	
Alkalinity, Total as CaCO3	mg/L	626	645	3	10	
Alkalinity,Bicarbonate (CaCO3)	mg/L	626	645	3	10	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: WET/40361 Analysis Method: SM 2510B
QC Batch Method: SM 2510B Analysis Description: 2510B Specific Conductance
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1159043 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	03/25/13 15:10	

SAMPLE DUPLICATE: 1159044

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	1280	1280	0	20	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: WET/40363 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

SAMPLE DUPLICATE: 1159047

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	7.9	0	5	H6

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: WET/40384 Analysis Method: SM 4500-S-2 D
QC Batch Method: SM 4500-S-2 D Analysis Description: 4500S2D Sulfide, Total
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1159189 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Total	mg/L	ND	0.050	03/26/13 02:12	

LABORATORY CONTROL SAMPLE: 1159190

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	.5	0.54	109	80-120	

MATRIX SPIKE SAMPLE: 1159191

Parameter	Units	60140850001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide, Total	mg/L	ND	.5	0.40	81	75-125	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: WETA/23973 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1158203 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	03/22/13 13:56	
Sulfate	mg/L	ND	1.0	03/22/13 13:56	

METHOD BLANK: 1158861 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Bromide	mg/L	ND	1.0	03/23/13 13:21	

LABORATORY CONTROL SAMPLE: 1158204

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	98	90-110	

LABORATORY CONTROL SAMPLE: 1158862

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1158205 1158206

Parameter	Units	60140753001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Bromide	mg/L	4.8	5	5	8.1	7.7	66	59	75-119	4	10	M1
Chloride	mg/L	136	100	100	235	238	99	102	64-118	1	12	
Sulfate	mg/L	494	500	500	939	945	89	90	61-119	1	10	

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QUALITY CONTROL DATA

Project: O&G WELLSITE GW
Pace Project No.: 60140850

QC Batch: WETA/23966 Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 Analysis Description: 353.2 Nitrate + Nitrite, Unpres.
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

METHOD BLANK: 1157928 Matrix: Water
Associated Lab Samples: 60140850001, 60140850002, 60140850003, 60140850004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Nitrate	mg/L	ND	0.10	03/22/13 09:01	
Nitrogen, Nitrite	mg/L	ND	0.10	03/22/13 09:01	
Nitrogen, NO2 plus NO3	mg/L	ND	0.10	03/22/13 09:01	

LABORATORY CONTROL SAMPLE: 1157929

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	1.6	1.7	104	90-110	
Nitrogen, Nitrite	mg/L	.4	0.39	99	90-110	
Nitrogen, NO2 plus NO3	mg/L	2	2.1	103	90-110	

MATRIX SPIKE SAMPLE: 1157930

Parameter	Units	60140841001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Nitrate	mg/L	0.22	1.6	1.9	105	90-110	
Nitrogen, Nitrite	mg/L	ND	.4	0.40	98	90-110	
Nitrogen, NO2 plus NO3	mg/L	0.22	2	2.3	104	90-110	

SAMPLE DUPLICATE: 1157931

Parameter	Units	60140850001 Result	Dup Result	RPD	Max RPD	Qualifiers
Nitrogen, Nitrate	mg/L	5.9	5.7	2	15	
Nitrogen, Nitrite	mg/L	ND	ND		31	
Nitrogen, NO2 plus NO3	mg/L	5.9	5.8	3	13	

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QUALIFIERS

Project: O&G WELLSITE GW
Pace Project No.: 60140850

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.

PRL - Pace Reporting 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/52518

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

Batch: OEXT/37675

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

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA recommended holding time.
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: O&G WELLSITE GW
Pace Project No.: 60140850

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60140850001	**PL1-MW1-130320**	RSK 175	AIR/16998		
60140850002	**SGU-MW1-130320**	RSK 175	AIR/16998		
60140850003	**CL1-MW1-130320**	RSK 175	AIR/16998		
60140850004	**CL1-MW2-130320**	RSK 175	AIR/16998		
60140850001	**PL1-MW1-130320**	EPA 3010	MPRP/21962	EPA 6010	ICP/17551
60140850002	**SGU-MW1-130320**	EPA 3010	MPRP/21962	EPA 6010	ICP/17551
60140850003	**CL1-MW1-130320**	EPA 3010	MPRP/21962	EPA 6010	ICP/17551
60140850004	**CL1-MW2-130320**	EPA 3010	MPRP/21962	EPA 6010	ICP/17551
60140850001	**PL1-MW1-130320**	EPA 3010	MPRP/21981	EPA 6010	ICP/17564
60140850002	**SGU-MW1-130320**	EPA 3010	MPRP/21981	EPA 6010	ICP/17564
60140850003	**CL1-MW1-130320**	EPA 3010	MPRP/21981	EPA 6010	ICP/17564
60140850004	**CL1-MW2-130320**	EPA 3010	MPRP/21981	EPA 6010	ICP/17564
60140850001	**PL1-MW1-130320**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60140850002	**SGU-MW1-130320**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60140850003	**CL1-MW1-130320**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60140850004	**CL1-MW2-130320**	EPA 3510C	OEXT/37675	EPA 8270C by SIM	MSSV/11871
60140850001	**PL1-MW1-130320**	EPA 8260	MSV/52518		
60140850002	**SGU-MW1-130320**	EPA 8260	MSV/52518		
60140850003	**CL1-MW1-130320**	EPA 8260	MSV/52518		
60140850004	**CL1-MW2-130320**	EPA 8260	MSV/52518		
60140850001	**PL1-MW1-130320**	SM 2320B	WET/40334		
60140850002	**SGU-MW1-130320**	SM 2320B	WET/40334		
60140850003	**CL1-MW1-130320**	SM 2320B	WET/40334		
60140850004	**CL1-MW2-130320**	SM 2320B	WET/40334		
60140850001	**PL1-MW1-130320**	SM 2510B	WET/40361		
60140850002	**SGU-MW1-130320**	SM 2510B	WET/40361		
60140850003	**CL1-MW1-130320**	SM 2510B	WET/40361		
60140850004	**CL1-MW2-130320**	SM 2510B	WET/40361		
60140850001	**PL1-MW1-130320**	SM 4500-H+B	WET/40363		
60140850002	**SGU-MW1-130320**	SM 4500-H+B	WET/40363		
60140850003	**CL1-MW1-130320**	SM 4500-H+B	WET/40363		
60140850004	**CL1-MW2-130320**	SM 4500-H+B	WET/40363		
60140850001	**PL1-MW1-130320**	SM 4500-S-2 D	WET/40384		
60140850002	**SGU-MW1-130320**	SM 4500-S-2 D	WET/40384		
60140850003	**CL1-MW1-130320**	SM 4500-S-2 D	WET/40384		
60140850004	**CL1-MW2-130320**	SM 4500-S-2 D	WET/40384		
60140850001	**PL1-MW1-130320**	EPA 300.0	WETA/23973		
60140850002	**SGU-MW1-130320**	EPA 300.0	WETA/23973		
60140850003	**CL1-MW1-130320**	EPA 300.0	WETA/23973		
60140850004	**CL1-MW2-130320**	EPA 300.0	WETA/23973		
60140850001	**PL1-MW1-130320**	EPA 353.2	WETA/23966		
60140850002	**SGU-MW1-130320**	EPA 353.2	WETA/23966		
60140850003	**CL1-MW1-130320**	EPA 353.2	WETA/23966		
60140850004	**CL1-MW2-130320**	EPA 353.2	WETA/23966		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: O&G WELLSITE GW
Pace Project No.: 60140850

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch

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Sample Condition Upon Receipt

WO#: 60140850

60140850

Optional
Proj Due Date:
Proj Name:

Client Name: Terracon

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

Tracking #: 8023 6946 6787 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-112 / T-194 **Type of Ice:** Wet Blue None ☐ Samples received on ice, cooling process has begun.
(circle one)

Cooler Temperature: 4.4

Temperature should be above freezing to 6°C

Date and initials of person examining contents: 3/21/13 BA

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. NO_2 NO_3, pH
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: Includes date/time/ID/analyses Matrix: WT	☑Yes	☐No	☐N/A	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: Pace Trip Blank lot # (if purchased):	☐Yes	☑No	☐N/A	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: [illegible] Date: 3/21/13

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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: of

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:	JOW ANSTEY
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 #:	

REGULATORY AGENCY

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

Site Location STATE: _____

Section D Required Client Information

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

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

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	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, pH	Alkalinity, Conductivity	Bromide, Chloride	6010-Ca,Mg,Na,K,Fe	Sulfide	PAH SIM	Strontium			Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60146850
1	PC1-MW1-130320	WT	G	3DG9H	3VG9H	3DG9B	1257		12	X		X		X													2AG4U			1BP2U 1BP3U 1BP3N1.5 1BP3Z1.5	001
2	SCU-MW1-130320	↓	↓	↓	↓	↓	1355		↓	X		X		X													↓			↓ ↓ ↓ ↓	002
3	CC1-MW1-130320	↓	↓	↓	↓	↓	1519		↓	X		X		X													↓				003
4	CC1-MW2-130320	↓	↓	↓	↓	↓	1600		↓	X		X		X													↓				004
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
				Brent Cks	3/21/13	830	4.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	JOSEPH WILEY					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 3/20/13				

*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

APPENDIX E – ANALYTICAL REPORT AND CHAIN OF CUSTODY