

2015 OUTCROP ZONE REPORT

FRUITLAND FORMATION OUTCROP ZONE ARCHULETA COUNTY, COLORADO

OCTOBER 2015

Prepared for:

**PETROX RESOURCES, INC.
Meeker, Colorado**

and

**ELM RIDGE RESOURCES, INC.
Dallas, Texas**



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Prepared for:

**PETROX RESOURCES, INC.
39868 Highway 13
Meeker, Colorado 81641-9635**

and

**ELM RIDGE RESOURCES, INC.
12225 Greenville Avenue, Suite 950
Dallas, Texas 75243-0597**

Prepared by:

**LT ENVIRONMENTAL, INC.
4600 West 60th Avenue
Arvada, Colorado 80003
(303) 433-9788**



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EXECUTIVE SUMMARY

This 2015 Outcrop Zone Report meets the requirements set forth by the United States Forest Service (USFS) and the Bureau of Land Management (BLM) in Decision Point 5 of the Record of Decision (ROD) in order to obtain approval of an application for permit to drill (APD) for coalbed methane (CBM) production of federal minerals in the Project Area. The Project Area includes approximately 18 miles of the Fruitland Formation (Kf) outcrop starting on the west end at the La Plata County-Archuleta County boundary near Beaver Creek and extends southeast along the Kf outcrop to the Southern Ute Indian Tribe (SUIT) Reservation boundary at Cabezón Canyon. In addition to the Kf outcrop, the Project Area includes a 1.5-mile buffer inward from the Kf and Kirtland Shale (Kk) boundary, known collectively as the “outcrop zone”.

The ROD was developed in response to the 2006 Final Environmental Impact Statement (FEIS) for the Northern San Juan Basin (NSJB). In July 2011, Petrox Resources, Inc. (Petrox) drilled a horizontal lateral of the Candelaria 10U#3 CBM production well from fee minerals through 172 feet of federal minerals within the Kf in the northeast quarter of the northwest quarter of Section 15U, Township 34 North, Range 5 West in Archuleta County, Colorado. The APD for the Candelaria 10U#3 CBM production well was approved February 2, 2012.

In addition to compliance with the ROD, the monitoring program detailed in this report meets the requirements of Sections 1, 2, and 4 of the Conditions of Approval (COA) for the Candelaria 10U#3 fee CBM production well (Permit), issued by the Colorado Oil and Gas Conservation Commission (COGCC).

Currently, Elm Ridge Resources, Inc. (Elm Ridge) does not have any active CBM production wells nor do they have any APDs planned within the outcrop zone.

The objective of this 2015 Outcrop Zone Report is to characterize the Project Area and evaluate the existing conditions of current and future CBM production of federal minerals in the Fosset Gulch Unit within the outcrop zone. The 2015 reconnaissance survey represents the fifth evaluation of the Project Area for development of the Fosset Gulch Unit.

Baseline conditions within the Project Area indicate conditions have not changed within the Project Area since 2004, despite ongoing CBM production since 1990 by Elm Ridge Resources, Inc. (Elm Ridge) in the nearby Pargin Mountain Unit. As stated in Decision Point 5 of the ROD, oil and gas producers are allowed to monitor-as-you-go after CBM wells are drilled and begin production. This approach appears warranted as there are 12 years of outcrop monitoring baseline data, the construction and monitoring of seven COGCC monitoring wells, the installation and monitoring of BLM soil vapor tubes, and historical/ongoing reservoir pressure data which all provide sufficient monitoring of the Kf outcrop, which has concluded there is virtually no methane seeping to the ground surface or active coal fires.

Throughout the lifecycle of CBM production in the Fosset Gulch Unit, Petrox and Elm Ridge will evaluate conditions to determine if production is contributing to methane seepage, coal fires, surface water depletion, or pressure changes in monitoring wells at or near the Kf outcrop. If CBM production is determined to be adversely impacting any of these conditions, Petrox and/or

Elm Ridge will evaluate the mitigation strategies discussed in the ROD and work with the BLM, USFS, and/or COGCC to implement effective mitigation measures.

Based on the monitoring results, evaluation of this report, and technical working group (TWG) (comprised of comprised of the BLM, USFS, COGCC, the SUIT, Petrox, and LT Environmental, Inc. (LTE)) meetings, LTE, Petrox, and Elm Ridge recommend the following to monitor the Project Area:

- Conduct annual surveys of methane flux at the ground surface where surface water transects the Kf outcrop utilizing 400-foot grid spacing during those years that the regional reconnaissance is not conducted. During regional reconnaissance years (last conducted in 2014), grid spacing will reduced to the previously conducted 200-foot spacing flux survey;
- Reduce the frequency of methane flux measurement at nearby abandoned production wells, specifically the Big Horn-Schomburg #1 abandoned production well, to one event every three years;
- Reduce the frequency of natural springs sampling along the Kf outcrop to every other year;
- Field verify suspect methane seeps along the Kf outcrop using scheduled regional reconnaissance methods of aerial fly-overs and field verification on a 3-year cycle (last conducted in 2014 and next scheduled for 2017);
- Reduce the frequency of abandoned coal mine surveys to every other year;
- Summarize and evaluate the BLM soil vapor monitoring tube data, if available, with statistical analysis using the Mann-Kendell test;
- Summarize and evaluate the COGCC monitoring well pressure data with an emphasis on monitoring wells Fosset Gulch MW 34-5-14-1 (API 05-007-06264) and Fosset Gulch MW 34-5-14-2 (API 05-007-06265);
- Summarize and evaluate annual natural gas and water production data from each Petrox/Elm Ridge CBM production well within the Fosset Gulch Unit; and
- Present this 2015 Outcrop Zone Report, prepared by LTE, to the TWG during its annual review.

In addition to modified monitoring plans developed through the TWG, the following action items were discussed and agreed to:

- No new monitoring wells will be required at this time;
- Petrox will incorporate water chemistry data from new production wells drilled prior to bringing them online per the COGCC COA. The data will be presented in subsequent outcrop zone reports;

- Petrox will collect and provide initial downhole pressure data for all new drill production wells within the outcrop zone prior to bringing them online. The data will be used in evaluating reservoir production efficiency and in evaluating the Mansoori modeling efforts. Modeling data will be incorporated into subsequent outcrop zone reports;
- Petrox will evaluate reservoir pressure data from new drill production wells as they occur within the outcrop and conduct periodic model runs similar to the initial Mansoori effort to monitor the actual reservoir behavior in comparison to the initial predictive effort. The frequency of this activity will be dependent on the data available. Results, when available, will be presented in subsequent outcrop zone reports;
- Petrox will commit to utilizing the Candelaria 10U#4, or other existing/proposed CBM production wells, for pressure monitoring for a period of no more the three months following completion of the well within the outcrop zone. The data will be provided to the TWG for evaluation. The data will also be incorporated into the outcrop zone report; and
- The outcrop zone reports and subsequent monitoring will be utilized for all APDs for Petrox and Elm Ridge within the Fosset Gulch Unit.



1.0 INTRODUCTION

This 2015 Outcrop Zone Report has been prepared at the request of Petrox Resources, Inc. (Petrox) and Elm Ridge Resources, Inc. (Elm Ridge) for the Project Area within the eastern half of the Northern San Juan Basin (NSJB) in Archuleta County, Colorado. The Project Area includes approximately 18 miles of the Fruitland Formation (Kf) outcrop starting on the west end at the Archuleta County-La Plata County boundary near Beaver Creek and extends southeast along the Kf outcrop to the Southern Ute Indian Tribe (SUIT) Reservation boundary at Cabezón Canyon. In addition to the Kf outcrop, the Project Area includes a 1.5-mile buffer from the Kf and Kirtland Shale (Kk) boundary, known collectively as the “outcrop zone”. Figure 1 illustrates the Project Area.

1.1 BACKGROUND

This report meets the requirements set forth by the United States Forest Service (USFS) and the Bureau of Land Management (BLM) in Decision Point 5 of the Record of Decision (ROD) in order to obtain approval of an application for permit to drill (APD) for coalbed methane (CBM) production of federal minerals in the Project Area. The ROD was developed in response to the 2006 Final Environmental Impact Statement (FEIS) for the NSJB.

In July 2011, Petrox drilled a horizontal lateral of the Candelaria 10U#3 CBM production well from fee minerals through 172 feet of federal minerals in the northeast quarter of the northwest quarter of Section 15U, Township 34 North, Range 5 West in Archuleta County, Colorado. The APD from the BLM for the Candelaria 10U#3 was approved February 2, 2012.

In addition to compliance to the ROD, the monitoring program detailed in this report meets the requirements of Sections 1, 2, and 4 of the Conditions of Approval (COA) for the Candelaria 10U#3 CBM production well (Permit), issued by the Colorado Oil and Gas Conservation Commission (COGCC). Outcrop monitoring has been conducted by Petrox and Elm Ridge in Archuleta County since 2004.

Currently, Elm Ridge does not have any active CBM production wells nor do they have any APDs planned within the outcrop zone.

As stipulated in the ROD, the technical working group (TWG), comprised of the BLM, USFS, COGCC, the SUIT, Petrox, and LT Environmental, Inc. (LTE), met in September 2012, December 2012, March 2013, and December 2014 to discuss the annual outcrop zone reports as well as future plans Petrox and Elm Ridge have for drilling within the outcrop zone. The next TWG meeting is tentatively scheduled for December 2015.

1.2 PROJECT OBJECTIVE

The objective of this 2015 Outcrop Zone Report is to continue to characterize the Project Area and evaluate the existing conditions for current and future CBM production of federal minerals within the outcrop zone. This 2015 Outcrop Zone Report marks the fifth year of evaluating the Project Area conditions based on the BLM Decision Point 5 of the ROD and will continue to be revised annually as new CBM production wells are drilled and monitoring continues. As

discussed in Decision Point 5 of the ROD, Project Area conditions will be evaluated through a monitor-as-you-go approach, which allows the oil and gas producer to monitor the Project Area while they drill and produce CBM production wells. The 2015 monitoring event marks the 12th year of monitoring the Kf outcrop per Sections 1, 2, and 4 of the COA for the Permit approved by the COGCC.

1.3 SCOPE OF WORK

The scope of work for this 2015 Outcrop Zone Report included the following tasks:

- Document changes to baseline conditions, if any, within the Project Area, which could include reservoir, geological, and/or hydrological data;
- Describe the monitoring and mitigation programs for the Project Area;
- Summarize the monitor-as-you-go results for the current monitoring program (2015);
- Evaluate the Project Area as it relates to CBM production of federal minerals;
- Prepare this report; and
- Discuss, evaluate, and assess the 2015 Outcrop Zone Report with the TWG.

1.4 ORGANIZATION OF REPORT

This report is organized into six sections including this introduction (Section 1.0). The documentation of project baseline conditions is described in Section 2.0. The monitoring and mitigation programs are discussed in Section 3.0. The monitor-as-you-go results are summarized in Section 4.0. The outcrop evaluation is detailed in Section 5.0. References are presented in Section 6.0. Figures, tables, and appendices follow the text in separate sections.

2.0 DOCUMENTATION OF PROJECT BASELINE CONDITIONS

Baseline conditions have been described in detail in the previous four Outcrop Zone reports, which can be viewed on the COGCC website at <http://cogcc.state.co.us/>.

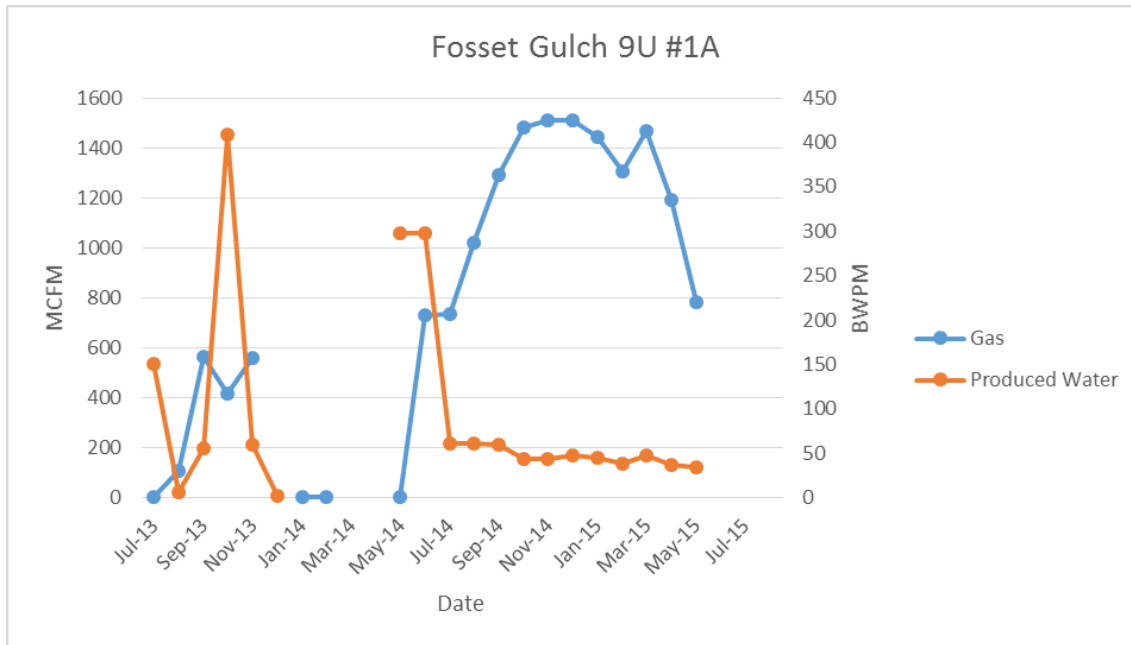
As stated in Decision Point 5 of the ROD, reporting of monthly gas and production data is to be included in the outcrop zone report. The table below summarizes total gas production rates and total produced water rates for the four Petrox CBM production wells (FGU 9U#1, FGU 9U#4, Candelaria 10U#3 (lateral), and FGU 9U#2) within the Fosset Gulch Unit in Archuleta County from May 2014 through August 2015:

Gas and Produced Water Production Rates, Fosset Gulch Unit, Archuleta County, Colorado

Month	Gas Production (Thousand Cubic Feet Per Month)	Water Production (Barrels per Month)
May 2014	12,548	922
June 2014	25,403	963
July 2014	26,278	492
August 2014	22,921	478
September 2014	19,973	462
October 2014	21,707	462
November 2014	20,019	444
December 2014	18,731	415
January 2015	14,921	359
February 2015	12,710	292
March 2015	12,997	319
April 2015	13,422	222
May 2015	9,349	271
June 2015	15,267	192
July 2015	13,602	215
August 2015	10,772	207

Below are graphical representations of monthly gas and water production rates for each Fosset Gulch Unit production well:

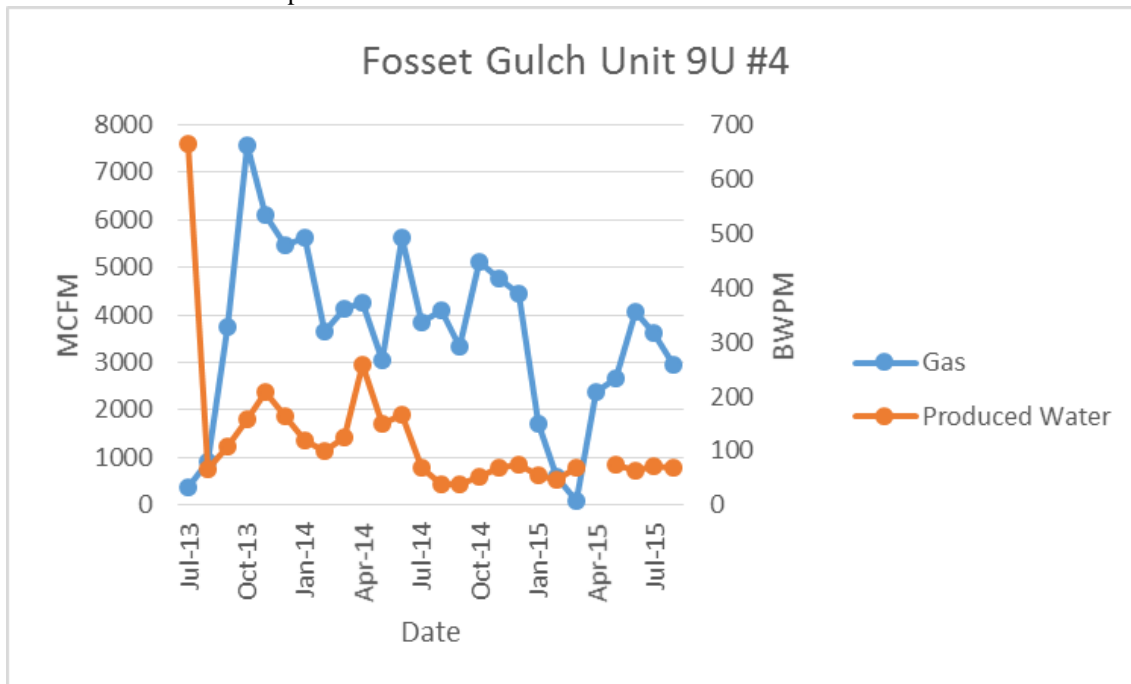




Notes:

MCFM – thousand cubic feet per month

BWPM – barrels of water per month

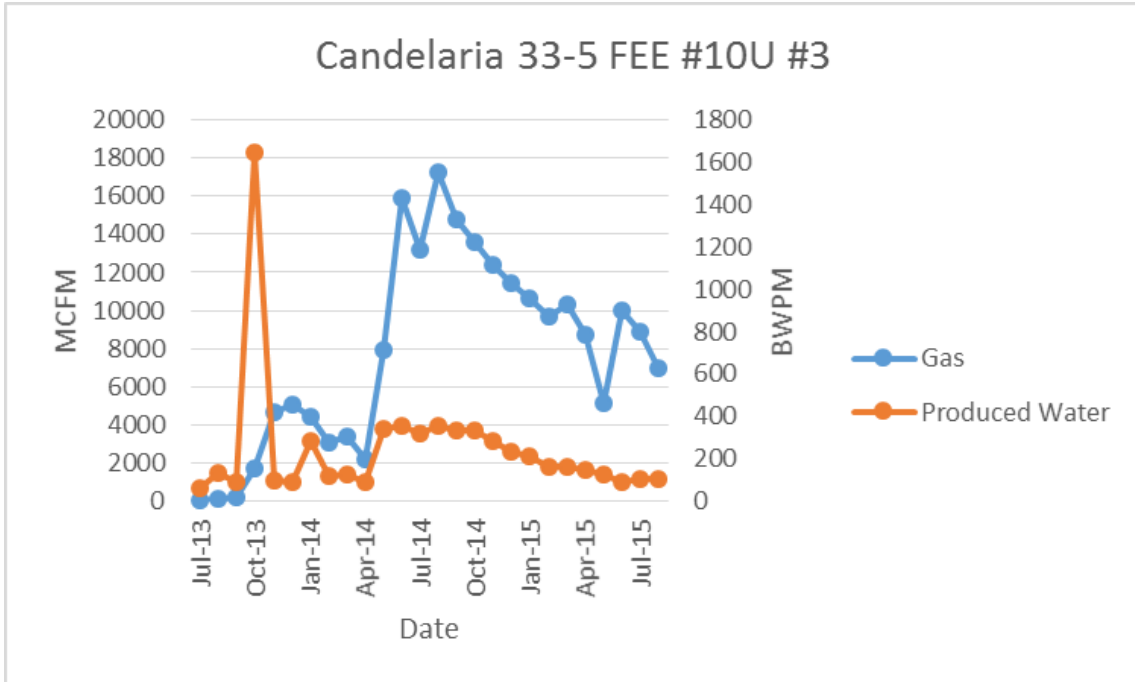


Notes:

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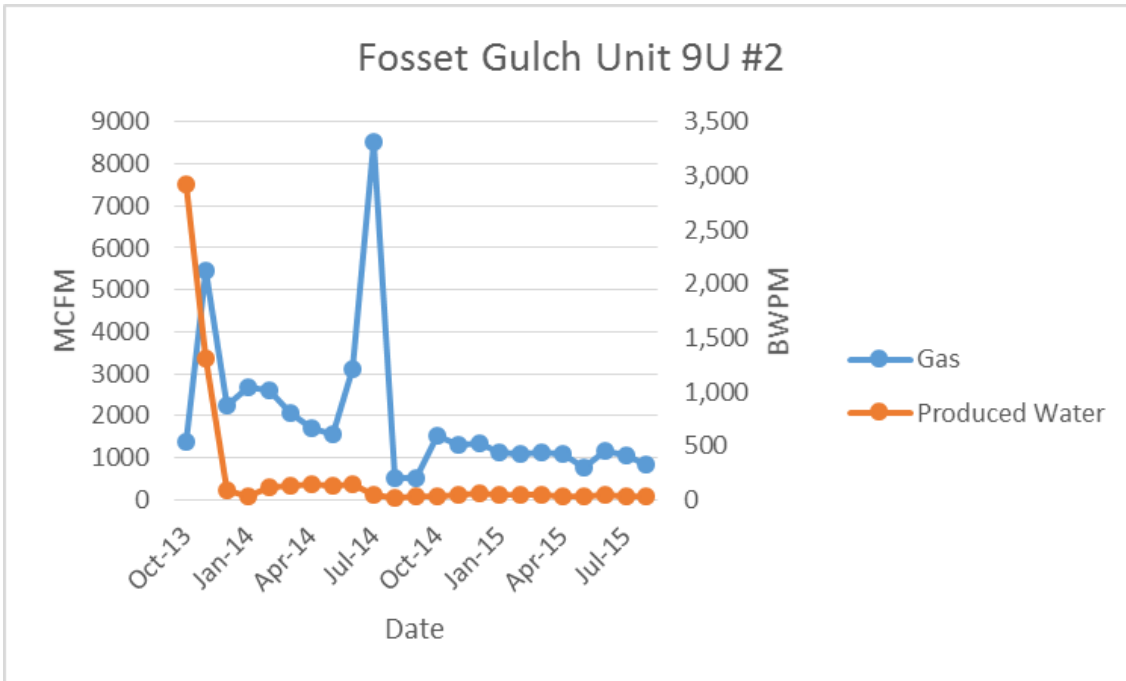




Notes:

MCFM – thousand cubic feet per month

BWPM – barrels of water per month



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MCFM – thousand cubic feet per month

BWPM – barrels of water per month



The water production rates for the four Fosset Gulch Unit CBM production wells continue to agree with the theory that the Kf is recharged by surface water infiltration of face cleats at the Kf outcrop. Face cleats tend to be parallel to the Kf outcrop in the Project Area, are resistive (sealed), and allow for limited recharge of the aquifer as seen by the limited water production.

3.0 MONITORING AND MITIGATION

Monitoring of the Kf outcrop has been in conducted since 2004 and is currently conducted using a variety of methods to characterize baseline conditions and identify changes if they occur. These data collection systems provide a consistent and repeatable data set with which changes to Kf outcrop conditions can be easily identified should they occur. The current program is being conducted with the approval of the COGCC and the TWG.

Petrox and Elm Ridge have contracted LTE to conduct the following monitoring tasks to comply with the Permit:

- Conduct annual surveys of methane flux at the ground surface where surface water transects along the Kf outcrop;
- Measure methane flux at the nearby Big Horn- Schomburg #1 abandoned production well;
- Identify and sample natural springs along the Kf outcrop;
- Conduct annual abandoned coal mine subgas and coal fire surveys;
- Evaluate COGCC monitoring well data;
- Evaluate BLM soil vapor tube (SVT) data; and
- Field verify suspect methane seeps along the Kf outcrop using scheduled regional reconnaissance methods of aerial fly-overs for color infrared imagery acquisition and field verification on a 3-year cycle.

These tasks have been incorporated into the annual monitoring program and are discussed in detail in subsequent sections of this report.

3.1 MONITORING HISTORY

Below is a brief summary of monitoring activities that have occurred to-date in the Project Area:

- In September 2004, LTE conducted an initial investigation of the Kf outcrop in Archuleta County, which consisted of an aerial fly-over reconnaissance and field inspections of identified suspect areas defined by stressed and dead vegetation;
- In 2005, similar data were collected with the addition of color infrared aerial imagery acquisition and sampling of natural springs along the Kf outcrop;
- In 2006, additional inspections of surface water in drainage transects of the Kf outcrop, collection of subsurface gas measurements from gas monitoring probes, and soil gas surveys at two abandoned production well sites were included to expand the data set;

- Since 2007, equipment capable of measuring the flux of soil gas moving across the soil surface to the atmosphere has been used in conjunction with the above described monitoring to quantify changes in methane seepage volumes;
- Since 2011, BLM SVT data and COGCC monitoring well pressure data have been reviewed and evaluated;
- TWG meetings have been held in September 2012, December 2012, March 2013, and December 2014. The meetings included members of BLM, USFS, COGCC, the SUI, Petrox, and LTE. Summaries of the TWG meetings are included in Appendix A.

Detailed information for each year can be reviewed in the respective yearly report, which is available on the COGCC website at <http://cogcc.state.co.us/>.

3.2 DETAILED MAPPING

3.2.1 Property Access

Prior to conducting field activities, land information is obtained from the Archuleta County Assessor's office. Parcel data is cross-referenced with the Kf outcrop geometry to identify owners of parcels located on the Kf outcrop. Much of the outcrop land is federal land with unrestricted access. An attempt to contact private landowners along the Kf outcrop in the Project Area is made prior to the initiation of field activities.

3.2.2 Drainage Transects

LTE conducts drainage transect surveys along the Kf outcrop in the Project Area (Figure 1) at the following locations:

- Beaver Creek;
- Squaw Creek;
- Little Squaw Creek;
- Pole Gulch;
- Peterson Gulch (West and East);
- Candelaria Ranch;
- Piedra River;
- Stollsteimer Creek; and
- Cabezon Canyon.

In the past, drainage transect surveys have been limited and/or not conducted at the Candelaria Ranch, Piedra River, and Cabezon Canyon due to property access denial.

3.2.3 Field Mapping

The grids for detailed mapping areas consist of a varying number of squares, ranging in area from 2,500 square feet to 40,000 square feet. The grid mapping system has proven to be systematic, consistent, repeatable, representative, and successful in delineating the lateral extent of seepage for similar projects within the NSJB. Grid spacing was expanded to a 400-foot spacing for 2013 and for subsequent years when regional reconnaissance events are not conducted (2015). During regional reconnaissance years (last conducted in 2014), grid spacing is reduced to the 200-foot spacing as conducted from 2007 to 2012. A 50-foot grid spacing is used for the Big Horn-Schomburg #1 abandoned production well survey. This approach is cost efficient and effective in achieving early methane seepage detection, if it ever becomes present. A detailed description of the flux meter and mapping process can be found in the 2013 Outcrop Zone Report. Specifications of flux mapping equipment are included in Appendix B.

LTE conducted detailed flux mapping along seven locations where surface water drainages transect the Kf outcrop in the Project Area from July 13 through July 22, 2015. Results of the 2015 mapping event are discussed in Section 4.2.

3.3 ABANDONED PRODUCTION WELL SURVEY

In 2005, LTE conducted an initial subsurface soil gas survey and installed a permanent gas monitoring probe in the vicinity of the Big Horn-Schomburg #1 abandoned production well located near the Kf outcrop in the southeast quarter of Section 14U, Township 34 North, Range 5 West (Figure 1). The production well was drilled and abandoned in 1961 and reference information indicates the Kf is close to, or outcrops at, this location (USFS/BLM, 2006). Geologic maps from the FEIS indicate the abandoned production well is located in the transition zone between the Kf and the Kk.

Since 2010, LTE has conducted an annual soil gas flux survey at the Big Horn-Schomburg #1 abandoned production well. LTE personnel collect methane flux points in the same manner as flux surveys conducted for the drainage transects. If methane is detected in soil, the seep area is then delineated in all four directions. Additionally, flux points are collected next to the abandoned production well utilizing the flux meter. A permanent gas monitoring probe exists nearby, which is monitored.

The 2015 abandoned production well survey was conducted on July 14, 2015. Results of the 2015 event are discussed in Section 4.3.

3.4 REGIONAL RECONNAISSANCE

Regional reconnaissance surveys of the Kf outcrop reconnaissance are conducted every three years (2004, 2008, 2011, and 2014) to supplement the detailed mapping of drainage transects. The next regional reconnaissance will be conducted in 2017.

Detailed information for the 2014 reconnaissance survey was reported in the 2014 Outcrop Zone Report, which is available on the COGCC website at <http://cogcc.state.co.us/>. New methane seeps and coal fires were not identified in 2014. The next regional reconnaissance survey will be conducted in 2017.

3.5 ABANDONED COAL MINE SURVEYS

Abandoned coal mine surveys were implemented in 2011 to comply with Decision Point 5 of the ROD. The purpose of surveying the abandoned coal mines along the Kf outcrop is to monitor mines as a potential preferential pathway for methane seepage and locations of surface and/or near-surface coal fires. The surveys are conducted using traditional subsurface soil gas techniques as described in previous reports. Locations of abandoned coal mine survey sites are illustrated on Figure 1.

Abandoned coal mine surveys have been conducted on an annual basis since 2011. Based on the third TWG meeting, the frequency of the surveys was increased to quarterly in 2013. After one year of quarterly monitoring had been completed, the results indicated that the frequency of subsequent surveys should be reduced to annually. If during subsequent surveys, data suggests inconsistent readings, the TWG will convene to discuss the data and possible additional actions.

The 2015 abandoned coal mine surveys were conducted on July 27 through July 30 2015. The results of the 2015 event are discussed in Section 4.4.

3.6 NATURAL SPRING SURVEY

At each accessible and flowing natural spring, field personnel collect water samples and monitor for methane near the natural springs using a portable flux meter. Field personnel locate the position of the natural spring using a Global Positioning System (GPS). An estimated water discharge rate is measured using a graduated cylinder and stopwatch. When possible, water quality measurements, including pH, electrical conductivity (EC), and temperature are collected at each sampled natural spring.

Laboratory analytical water samples are collected at each accessible and flowing natural spring in bottles and containers prepared by the subcontracted analytical laboratories. Each sample bottle is labeled, indicating project and sample identification, and the date and time of sample collection. Samples are delivered directly or shipped to the laboratories under chain-of-custody protocols.

Water samples from the natural springs are collected and analyzed for the following:

- Major cations [dissolved sodium (Na), calcium (Ca), magnesium (Mg), potassium (K), and iron (Fe)] by United States Environmental Protection Agency (EPA) Method 200.7/4500;
- Alkalinity (carbonate/bicarbonate) by EPA Method 2320 B;
- Major anions [chloride (Cl), sulfate (SO₄), bromide (Br), and fluoride (F)] by EPA Method 200.7/4500;
- pH by EPA Method 150.1;
- Specific conductance by EPA Method 120.1;

- Nitrate/Nitrite as Nitrogen (N) by EPA Method 353.3;
- Total dissolved solids (TDS) by EPA Method 2540 C;
- Dissolved methane by Method RSK 175; and
- Sodium Adsorption Ratio (SAR) by United States Department of Agriculture (USDA) Handbook 60.

Natural spring water samples are collected and then submitted to Four Corners Geoscience, Inc. for analysis of dissolved methane. General water chemistry samples are submitted to Green Analytical Laboratories. Figure 1 depicts the locations of known natural springs within the Kf outcrop in the Project Area.

The 2015 natural springs sampling event was conducted in May and July 2015. Results are discussed in Section 4.5.

3.7 COGCC MONITORING WELL DATA ANALYSIS

In 2008, the COGCC initiated a Kf reservoir pressure monitoring well program in the Chimney Rock Area of Archuleta County with the cooperation of the USFS. The monitoring wells supplement data produced by an existing monitoring well network in La Plata County and on the SUT reservation. The Archuleta County monitoring wells measure formation pressures in the coal seams in the Kf and were installed to establish baseline conditions prior to initiation of CBM development. There are four monitoring well areas within the Project Area (Figure 1). The COGCC measures monitoring well pressures twice daily with permanently installed pressure transducers, data loggers, and telemetry. The data are documented and interpreted by the COGCC in annual reports available for public review.

Results for the 2015 COGCC monitoring well evaluation are included in Section 4.6.

3.8 BLM/USFS SOIL VAPOR TUBE DATA

The BLM has been collecting subsurface methane concentrations from 67 permanent monitoring SVT probes located along eight transects running perpendicular to the Kf outcrop in Archuleta County (Figure 1). SVT data collection began in November 2001 at the Beaver Meadows and Yellow Jacket Pass transects. The first SVT data were collected from the other six transects in August or October 2004. Subsequent measurements have been collected approximately every other month. The most recent SVT data available to LTE at the time of this report were collected from July 2012 through August 2013. SVT data collection at the Candelaria Pasture transect ended in August 2006 when the BLM was denied access to the property. Analysis of the BLM SVT monitoring data is conducted using the Mann-Kendall test included in the Excel[®] application MAKESENS. Results of the 2015 analysis are discussed in Section 4.7.

3.9 MITIGATION ALTERNATIVES

The monitoring programs outlined above and detailed in previous Outcrop Zone reports (found on the COGCC website) provide early detection of potential methane seepage, coal fires, and/or

affected natural springs on or adjacent to the Kf outcrop within the Project Area. Since field crews walk the major drainages annually and traverse large sections of the outcrop as part of the regional reconnaissance, observations of vegetative conditions, excessive heat emanating from the ground, smoke, and olfactory observations that may indicate the presence of a methane seepage and/or coal fire can be detected at the early onset of such impacts. Natural springs are sampled during the spring season when most of the natural springs tend to flow.

As agreed upon in the third TWG meeting, triggers for TWG convening to discuss produced water issues will be either high produced water volumes (greater than (>)100 barrels of water per day/well), fresh water composition (less than (<)1,000 parts per million), or both. Additional triggers will be developed as CBM production evolves in the Fosset Gulch Unit. Mitigation alternatives will be developed on a case-by-case basis.

In the event methane seepage is identified along the Kf outcrop in Archuleta County, reasonable mitigation efforts, such as reduced or suspended gas production, if clearly demonstrated that such efforts will be effective in mitigating adverse impacts to water resources, vegetation, and/or public health and safety due to fugitive methane gas seeping to the ground surface, will be implemented. LTE has direct experience in conducting mitigation of active methane seeps to address impacts to vegetation, public health and safety, and from unrecovered resources in La Plata County. If appropriate, Petrox will implement similar measures as necessary to mitigate such impacts, should they occur. The measures may include one or more of the potential options discussed in the *Preliminary Evaluation of Methane Seepage Mitigation Alternatives* report (LTE, 2006).

As agreed upon in the third TWG meeting, triggers for TWG convening to discuss potential/known methane seepage include, but are not limited to, methane seepage identified during drainage transect surveys or regional reconnaissance surveys, changes in reservoir permeability, and changes in drainage patterns. Mitigation alternatives will be developed on a case-by-case basis.

Evidence of coal fires have not been observed during the past 11 years of monitoring activities. The treatment of coal fires is both very dangerous and expensive. Near-surface coal fires can be extinguished by an extensive network of injection wells drilled into the affected seam where water, mud, or concrete slurries are used to smother the fire in a conjunction with near-surface excavation activities. In La Plata County, efforts to extinguish active coal fires via injection near the Kf outcrop have been ineffective until recently, when one coal fire was extinguished within the SUIT reservation. Petrox and LTE will look into the SUIT's success in extinguishing their coal fire and evaluate the technical feasibility in the event a coal fire ignites along the Kf outcrop in Archuleta County and Petrox is deemed the responsible party.

The TWG will convene if monitoring of the Kf outcrop in the Project Area indicates a potential for surface and/or near-surface coal fires or if coal fires are observed during field activities. Mitigation alternatives will be evaluated on a case-by-case basis.

4.0 MONITOR-AS-YOU-GO RESULTS

This section presents the 2015 monitoring results for the Project Area.

4.1 PROPERTY ACCESS

LTE personnel were denied access to several properties; as a result, no monitoring activities were conducted on these properties during the 2015 monitoring event. The 2015 status of access to parcels is illustrated on Figure 2 and presented in Table 1.

4.2 DRAINAGE TRANSECT SURVEYS

During 2015, LTE conducted inspections from July 13 to July 27, 2015, at the following seven accessible locations where surface water drainages transect the Kf outcrop in Archuleta County:

- Beaver Creek;
- Squaw Creek and Little Squaw Creek;
- Pole Gulch;
- Peterson Gulch;
- Candeleria Ranch
- Piedra River; and
- Stollsteimer Creek.

4.2.1 Water Surface Inspections

Methane was not observed being discharged as bubbles on the water surface at the seven drainage transects inspected during the 2015 monitoring event.

4.2.2 Soil Gas Flux Measurements

Using the flux meter, LTE personnel collected soil gas flux measurements along the seven drainage transects during the 2015 monitoring event. Reportable methane flux (greater than 0.2 moles per square meter per day [$\text{mol}/\text{m}^2\cdot\text{day}$]) was not recorded at any of the 197 measurement points.

4.2.3 Total Methane Volumetric Flux Estimation

There was no reportable methane detected in Archuleta County during the 2015 flux survey and as a result, the total methane volumetric flux is 0.0 thousand cubic feet per day (MCFD).

The methane flux measurement locations for the seven drainage transects are presented on Figure 3. Flux data is summarized in Table 2. The methane flux data are presented Appendix C.

4.2.4 Historical Methane Flux Data Comparison

From 2007 to 2009, total volumetric methane flux was calculated using all methane flux values recorded in the field, regardless of the technical limitations of the flux meter. However, methane flux values below the reporting limit of 0.2 mol/m²·day are not considered accurate and/or repeatable by the manufacturer of the flux meter. Therefore, the total volumetric methane flux reported in prior years appears to be inflated with inaccurate data. In 2010, only two methane flux values were detected above the reporting limit. As a result, limited data points with reportable methane flux values cannot be used to accurately calculate total reportable methane volumetric flux. An attempt to calculate the total reportable methane volumetric flux with limited data points would ultimately lead to results that might not reflect the actual methane volumetric flux within Archuleta County.

Reportable methane flux was detected in five locations in 2007 and 2008, and then dropped to three locations in 2009. Reportable methane flux was not recorded in any locations during the 2010 survey. In 2011, only two locations detected reportable methane flux. Every location sampled in 2012, 2013, 2014, and 2015 were below the reportable detection limit. Limited reportable methane flux values and low historical volumetric methane fluxes detected in Archuleta County appear to be associated with background levels.

4.2.5 Total Carbon Dioxide Volumetric Flux Estimation

As with estimating the total flux of methane at each drainage transect using data collected with the flux meter, LTE interpolated and gridded carbon dioxide flux data along each of the seven drainage transect areas, and then contours and processes the data to estimate total flux. Carbon dioxide flux contours and values are included on Figure D in Appendix D.

For a better perspective of the carbon dioxide flux rates, LTE converted the mass flux values into volumetric flux units of cubic feet per day (CFD), assuming equal areas. The unit conversion is based on the molecular weight of the gas and the density of the gas at approximately 7,000 feet amsl. For carbon dioxide flux, the calculation is as follows:

$$\frac{\text{mol CO}_2}{\text{day}} \times \frac{44.01 \text{ g CO}_2}{\text{mol CO}_2} \times \frac{0.0253 \text{ ft}^3 \text{ CO}_2}{\text{g CO}_2} = \frac{\text{ft}^3 \text{ CO}_2}{\text{day}}$$

For example,

$$1.0 \text{ mol/day CO}_2 = 1.11 \text{ CFD CO}_2$$

Notes:
mol – mole CO₂ – carbon dioxide g – gram ft³ – cubic feet

Due to low concentrations of methane detected along the drainage transects, the carbon dioxide flux values do not appear to correlate with methane concentrations. It appears that carbon dioxide is naturally occurring along the drainage transects and as a result, carbon dioxide data is not discussed for each transect. Carbon dioxide flux data are included in Appendix C.



4.3 ABANDONED PRODUCTION WELL SURVEY

LTE conducted the 2015 Big Horn-Schomburg #1 abandoned production well site survey on July 13, 2015. LTE collected 18 flux measurements with no reportable methane detected. A single reportable methane flux point was detected in 2007, 2009, and 2011. Figure 3 presents the results of the Big Horn-Schomburg #1 abandoned production well survey. The methane flux data are presented in Table 2 and included in Appendix C.

4.4 ABANDONED COAL MINE SURVEYS

In 2011, LTE identified seven abandoned coal mines along the Kf outcrop. Due to continued property access denial, the Unnamed Abandoned Mine, Cabezon Project mine, and Chimney Rock Coal mine were not surveyed in 2015. Below is a summary of subsurface soil gas surveys for four abandoned coal mines along the Kf outcrop. The abandoned coal mine surveys were conducted from July 27 to July 30, 2015. Figures 5 through 9 illustrate subsurface soil gas and temperature measurements. Subsurface soil gas and temperature measurements are presented in Appendix E.

Methane was not detected at any of the abandoned coal mines. Carbon monoxide is a by-product of coal combustion. With limited carbon monoxide and low subsurface temperatures, there does not appear to be active combustion/fires in the vicinity of these four coal mines. As additional verification, LTE did not observe other potential indicators of underground coal fires such as dead vegetation, charred ground, or visible smoke or steam during these surveys.

4.5 NATURAL SPRINGS SURVEY

4.5.1 Sampling Status

A total of 35 potential natural springs were identified in 2015 on or near the Kf outcrop in Archuleta County. Of the 35 natural springs, 12 natural springs were sampled in 2015. Those natural springs that were not sampled were due to property access denial by landowners or the natural spring was dry or stagnant at the time of sampling.

The locations of natural springs are presented on Figure 10. A summary of the natural springs sampled in 2015, along with past sampling status, is presented in Table 3.

4.5.2 Field Measurements and Observations

Field observations and measurements of temperature, pH, and EC were collected at the sampled natural springs. The 2015 field observations and measurements for the natural springs, including historical measurements, are summarized in Table 4.

Natural spring discharge rates were calculated by dividing the known volume of a container by the time required to fill the container. The flow rates measured in 2015 are similar to the low flow rates measured during previous monitoring events. Natural spring discharge rates, including historical data, are presented in Table 5.

4.5.3 Natural Spring Sampling and Analysis

The COGCC uses 2 milligrams per liter (mg/L) for methane in domestic water systems as the threshold to conduct further investigation of the origin of the methane in the water. The COGCC considers water systems containing dissolved methane concentrations above 2 mg/L as having an increased risk of desorption from the water and creating potentially explosive conditions in confined spaces. All concentrations of dissolved methane in the natural spring water samples were below the 2 mg/L threshold in 2015. Laboratory analytical results for dissolved methane in natural spring waters, including historical results, are summarized in Table 6.

The water from each of the natural springs sampled are calcium bicarbonate in makeup. Major ion chemistry of the natural springs is summarized in Table 7.

Laboratory analytical reports are presented in Appendix F.

4.5.4 Subsurface Soil Gas Measurements

One set of subsurface soil gas measurements, using traditional subsurface soil gas sampling techniques, was collected at the 12 natural springs sampled in 2015. Methane was not detected in the subsurface at any of the 12 natural spring locations.

4.6 COGCC MONITORING WELL DATA ANALYSIS

The COGCC provided LTE with twice-daily monitoring well pressure and temperature data from December 2010 through October 1, 2015, for each of the 4M/Archuleta monitoring wells. Historical data have been discussed in several reports on 4M project monitoring posted on the COGCC website. A general analysis of results for each well is discussed in the subsequent sections of this report. In general, all monitoring wells indicate the presence of free gas at the outcrop with no surface methane seeps. The locations of the COGCC monitoring wells are depicted on Figure 1.

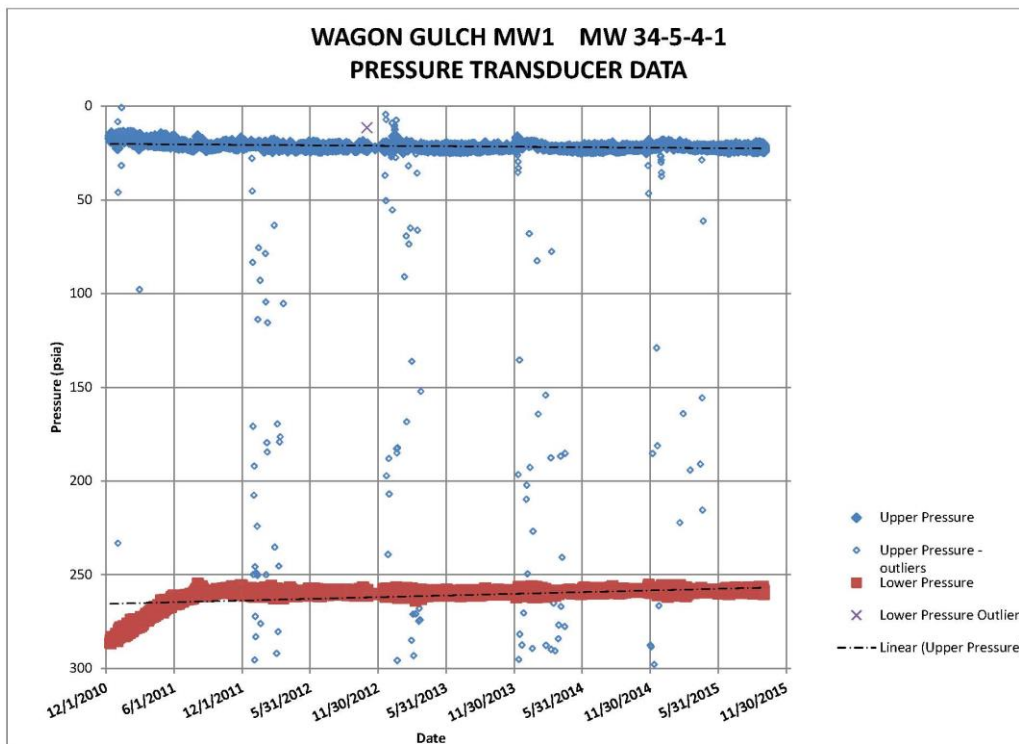
4.6.1 Wagon Gulch

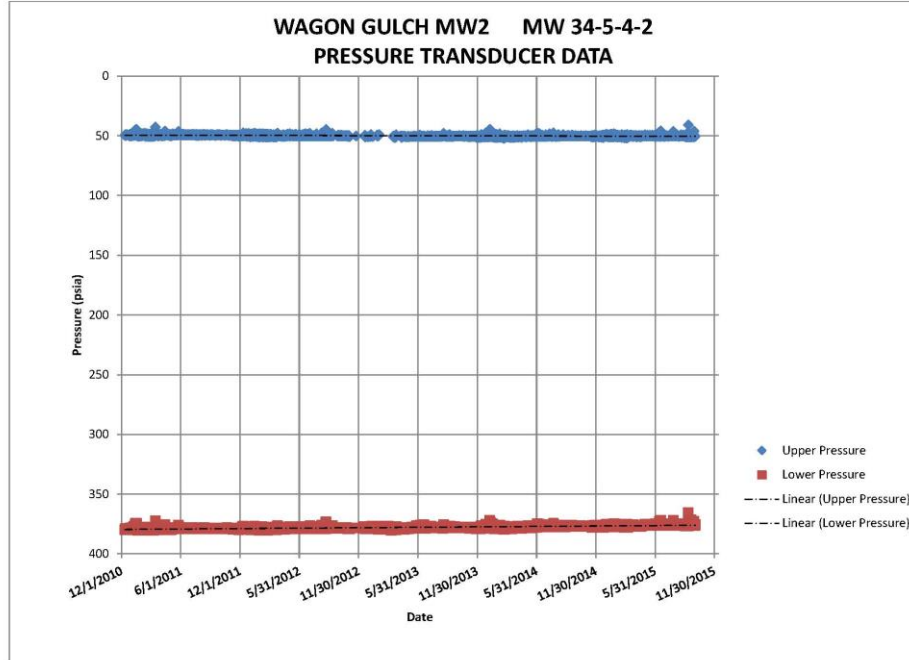
Wagon Gulch monitoring wells MW 34-5-4-1 and MW 34-5-4-2, located in Section 4 of Township 34 North, Range 5 West adjacent to the north central part of the Fosset Gulch Unit, have been monitored since December 2, 2008.

Monitoring well MW 35-5-4-1 did not reach an initial stable pressure for approximately three weeks following installation. From January 2008 through mid-November 2010, wellhead pressures declined following stabilization. At that time, the trend reversed and the wellhead pressure increased slightly through July 2011. From July 2011 to September 2013, the wellhead pressures have remained relatively stable. The graphs below depict upper (wellhead) and lower (bottomhole) transducer data from January 2011 to September 2013. A number of spurious readings in the winter months (January through March and December in 2011, 2012, and 2013, and January through May 2015) have been plotted as outliers. The majority of those readings were collected in the early morning hours, and the erroneous readings are attributed to overnight freezing of the transducer, which is mounted externally. Downhole pressures (from the “lower transducer”) remained stable through 2015. The previous increase in bottomhole pressure from

December 2008 to November 2010 indicates a net water level rise in the monitoring well since installation. Between November 2010 and November 2011, water levels decreased by approximately 20 feet and have been relatively stable since that time.

Monitoring well MW 34-5-4-2 was shut in for monitoring on December 4, 2008, but stable pressure transducer readings were not obtained until April 2009. From February 2009 to April 23, 2009, no data were available due to a pressure transducer malfunction as a result of freeze damage. At the time of the 2015 monitoring event, the water level inside the open wellhead was at a height of 2.5 feet above ground level. After the well was shut in following repairs, wellhead pressure buildup returned rapidly. The well has had a relatively constant wellhead pressure of 47 to 48 pounds per square inch, absolute (psia), and a bottomhole pressure of 375 psia between April and October 2009. In 2013, several data gaps were observed at the upper transducer, particularly in February and the first half of March 2013, which may also be due to freezing of the transducer. However, all the measured upper pressures have remained steady with a slight rise to a range of 48 psia to 50 psia at the wellhead. A slight downward trend in the bottomhole pressure has been observed since 2011, with an average bottomhole pressure of approximately 379 psia in January 2011, decreasing to an average of approximately 376 psia in the latter part of 2015.

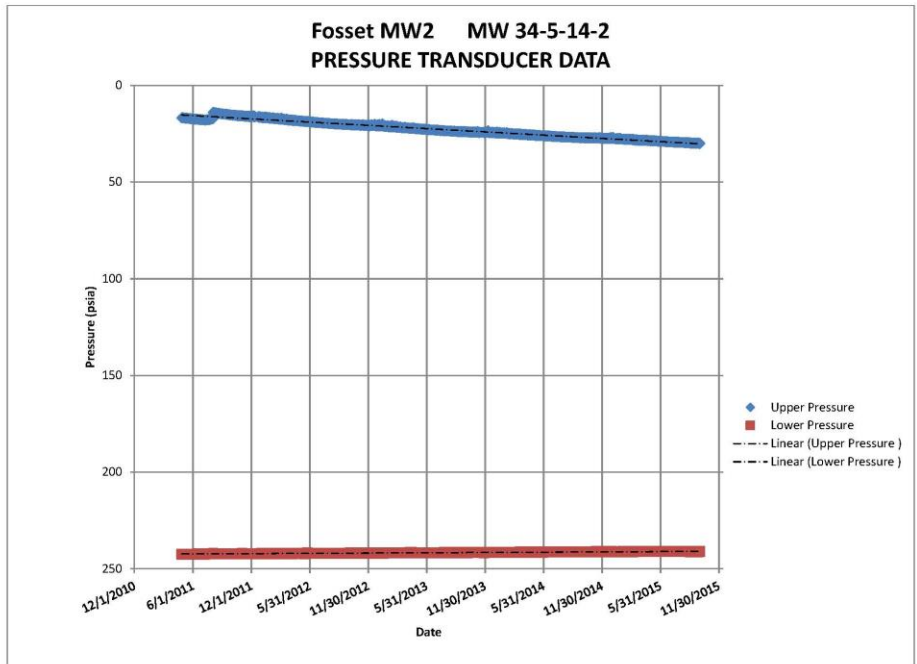
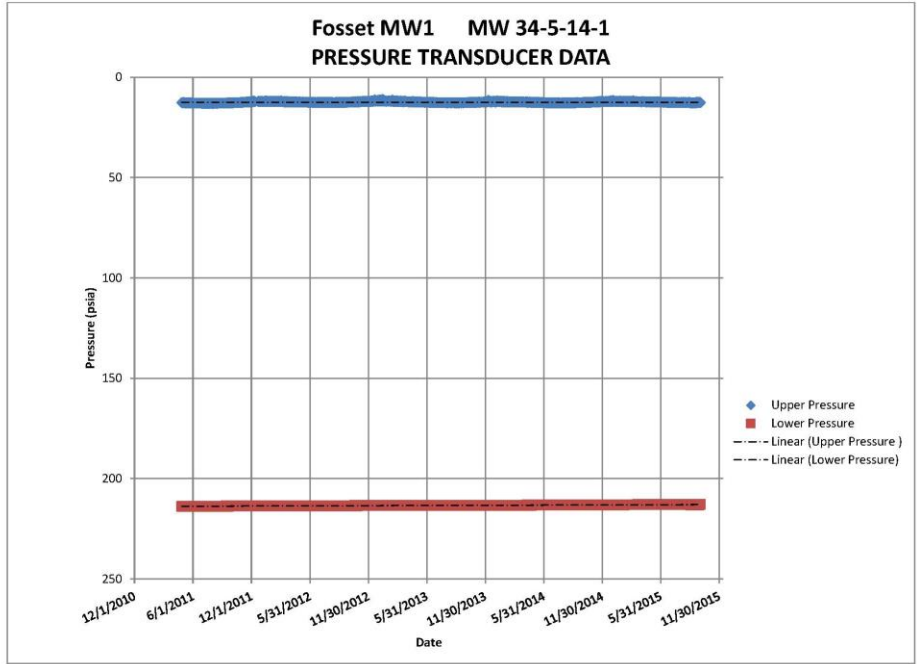




4.6.2 Fosset Gulch

Fosset Gulch monitoring wells MW 34-5-14-1 and MW 34-5-14-2, located in Section 14 of Township 34 North, Range 5 West adjacent to the south central part of the Fosset Gulch Unit, have been monitored by the COGCC since December 4, 2008. Historical data provided in COGCC annual reports indicate a relatively constant wellhead pressure in MW 34-5-14-1 until November 2009 when the water level began a gradual decline of about 8 feet until July 2010. The well was vented in August 2010 and water levels nearly recovered to previous levels. Pressure data from April 2011 through October 2015 are presented in the graphs below and exhibit a slight annual fluctuation from 13 psia in the summertime to 12 psia in the winter months and a gradual decline in bottomhole pressure from 214 psia to 213 psia over the period from 2011 to 2015.

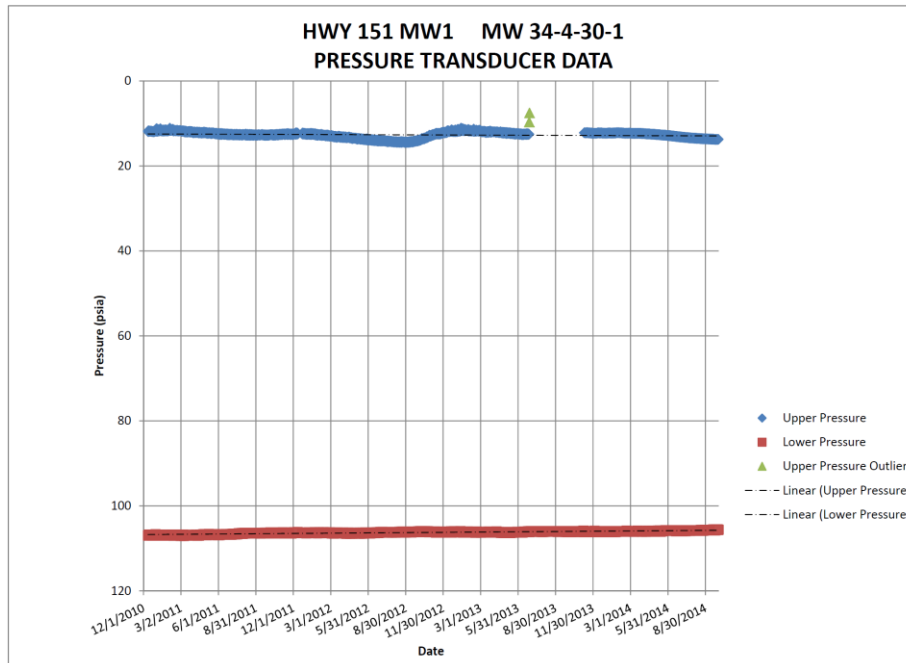
Monitoring well MW 34-5-14-2 initially displayed wellhead pressure drops immediately corresponding to rises in water levels each time the well was vented to the atmosphere. The most recent venting event took place on August 3, 2011. Wellhead pressures for 2012, 2013, 2014, and 2015 do not indicate that any subsequent venting has taken place. From August 2011 to October 2015, the bottomhole pressure has decreased slightly from approximately 242.4 psia to 240.9 psia and the wellhead pressure has gradually increased from approximately 14 psia to 29 psia.

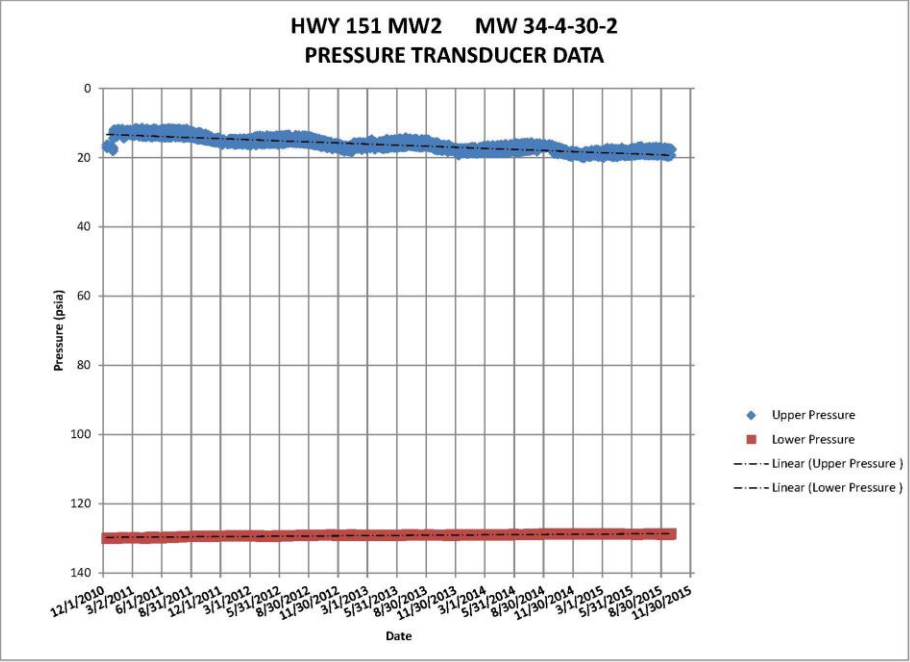


4.6.3 Highway 151

Monitoring wells MW 34-4-30-1 and MW 34-4-31-2, located in Section 30 of Township 34 North, Range West adjacent to the north end of the Fosset Gulch Unit, have been monitored since December 3, 2008. A small drop in wellhead pressure was observed on June 2, 2010, corresponding to wellhead venting. Pressure data from January 2011 through September 2015 are displayed in the graphs below. Wellhead pressures in monitoring well MW 34-4-30-1 have displayed some seasonal fluctuation, with lower values observed in Winter months and higher values in Summer. Overall the fluctuations range between approximately 11.5 psia and 14.5 psia. The upper transducer readings became erratic in June 2013 and ceased altogether in July 2013. Readings from this transducer resumed on November 26, 2013. A slight decrease in bottomhole pressure has been observed over the period from 2011 to 2015, declining from approximately 106.8 psia to 105.6 psia between January 2011 and September 2015.

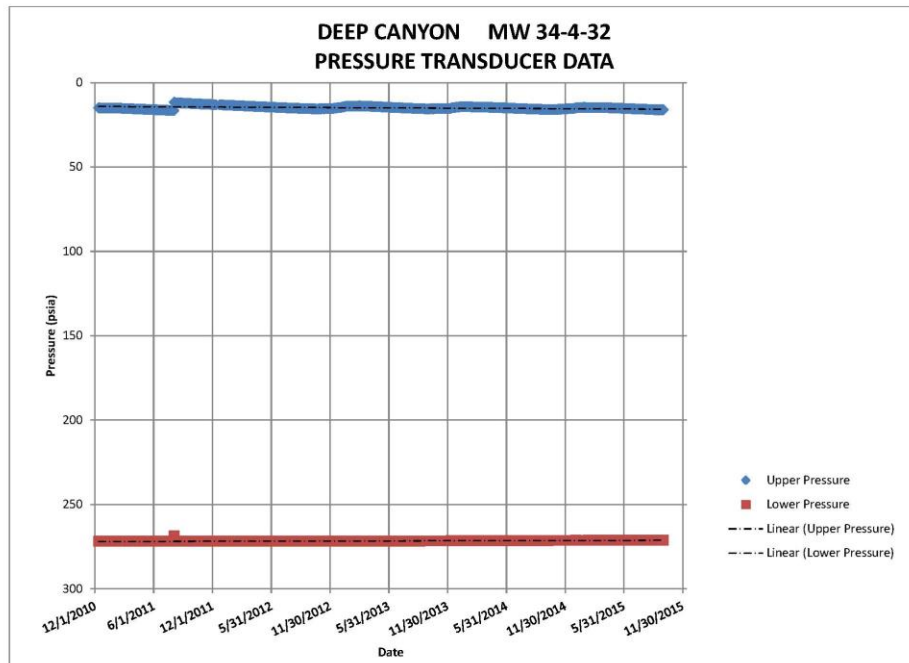
Monitoring well MW 34-4-30-2 displays a slight decline in bottomhole pressure, from approximately 130 psia to 129 psia, over the period from 2011 to 2015. Wellhead pressures display annual fluctuations (on the order of 2 psia), with lower values in the Fall and higher values in the Spring. There is an overall upward trend over the period from 2011 to 2015, from an average of approximately 13 psia to 18 psia.





4.6.4 Deep Canyon

The Deep Canyon monitoring well MW 34-4-32-1 came online in June 2010. The well pressure stabilized six days after the well was shut in and then displayed a nearly constant bottomhole pressure of 271.9 psia to 271.1 psia through October 2015. A change in the bottomhole pressure was observed on August 3, 2011, corresponding to a venting event, with recovery of bottomhole pressure within one day. Wellhead pressures have increased gradually from June 2010 to August 3, 2011, when pressures dropped from 16.5 to 11.5 psia. Wellhead pressures have recovered slowly over the subsequent 12 months. From October 2012 to February 2013, wellhead pressures fell from approximately 15.5 psia to 14 psia and then recovered to 15.5 psia in September 2013. It appears that another venting event occurred in November 2013, with wellhead pressures recovering to approximately 16 psia in October 2015.



4.6.5 Overall COGCC Monitoring Well Analysis

All COGCC monitoring wells installed within the Kf outcrop as part of the 4M/Archuleta Project Area exhibit free gas. This free gas is not produced by withdrawing water out of the Kf and is able to build pressure back after venting. The COGCC monitoring well data indicate free gas is present at the Kf outcrop at depth. This conclusion is consistent with observations of pressure data for Petrox CBM production wells in the area, gas production without dewatering in existing production wells, and the Mansoori modeling results.

4.7 BLM/USFS SOIL VAPOR TUBE DATA ANALYSIS

SVT monitoring data was obtained from the BLM for the period from February 2014 through July 2015 and found that no new methane concentration data had been collected from transects during that period of time. As a result, statistical analysis of the SVT data could not be conducted for this 2015 Outcrop Zone Report.

Historically, methane has been detected in the SVTs, with no methane flux measured in the vicinity of the SVTs, which supports the data reported herein demonstrating free gas is present at depth in the Kf outcrop; however, it is not migrating to the surface as a seep.

5.0 OUTCROP EVALUATION

This 2015 outcrop evaluation is based on past work within the Project Area and current conditions documented during the 2015 monitoring event. Outcrop evaluations from the previous three Outcrop Zone reports can be viewed on the COGCC website at <http://cogcc.state.co.us/>.

Based on reservoir, geological, and hydrogeological characteristics of the Kf and specifically within the Project Area, the potential for CBM development of federal minerals within the outcrop zone to adversely affect the Project Area appears low with regards to methane seepage and/or coal fires.

Baseline conditions within the Project Area indicate there is no methane seeping to the surface. Conditions have not changed within the Project Area since 2004 despite the presence of free gas in the subsurface at the outcrop. As stated in Decision Point 5 of the ROD, oil and gas producers are allowed to monitor-as-you-go. This approach appears warranted as there are 12 years of data in conjunction with monitoring wells, descriptive reservoir openhole logs, a drainage and performance simulation study, and pressure data history that indicate free gas in the subsurface and no detectable seeps at the ground surface. If methane seeps begin to develop and/or coal fires are observed during the production of CBM within the outcrop zone, then the mitigation strategies discussed in this report and the NSJB ROD will be reviewed and implemented where applicable.

Based on the monitoring results and evaluation of this report, LTE, Petrox, and Elm Ridge recommend the following:

- Conduct annual surveys of methane flux at the ground surface where surface water transects the Kf outcrop utilizing a 400-foot grid spacing during those years that the regional reconnaissance is not conducted. During regional reconnaissance years (next event in 2017), grid spacing will be reduced to the previously conducted 200-foot spacing flux survey;
- Reduce the frequency of methane flux measurement at nearby abandoned production wells, specifically the Big Horn-Schomburg #1 abandoned production well, to one event every three years;
- Reduce the frequency of natural springs sampling along the Kf outcrop to every other year;
- Field verify suspect methane seeps along the Kf outcrop using scheduled regional reconnaissance methods of aerial fly-overs and field verification on a 3-year cycle (next event in 2017);
- Reduce the frequency of abandoned coal mine surveys to every other year ;
- Summarize and evaluate the BLM SVT data, if available, with statistical analysis using the Mann-Kendell test;

- Summarize and evaluate the COGCC monitoring well pressure data with an emphasis on monitoring wells Fosset Gulch MW 34-5-14-1 (API 05-007-06264) and Fosset Gulch MW 34-5-14-2 (API 05-007-06265);
- Summarize and evaluate annual natural gas and water production data from each Petrox/Elm Ridge CBM production well within the Fosset Gulch Unit; and
- Present this 2015 Outcrop Zone Report to the TWG during an annual review session.

In addition to modified monitoring plans developed through the TWG, the following action items were discussed and agreed to:

- No new monitoring wells will be required at this time;
- Petrox will incorporate water chemistry data from new production wells drilled prior to bringing them online per the COGCC COAs. The data will be presented in subsequent outcrop zone reports;
- Petrox will collect and provide initial downhole pressure data for all new drill production wells within the outcrop zone prior to bringing them online. The data will be used in evaluating reservoir production efficiency and in evaluating the Mansoori modeling efforts. Modeling data will be incorporated into subsequent outcrop zone reports;
- Petrox will evaluate reservoir pressure data from new drill production wells as they occur and conduct periodic model runs similar to the initial Mansoori effort to monitor the actual reservoir behavior in comparison to the initial predictive effort. The frequency of this activity will be dependent on the data available. Results, when available, will be presented in subsequent outcrop zone reports;
- Petrox will commit to utilizing the Candelaria 10U#4, or other existing/planned production wells, for pressure monitoring for a period of no more the three months following completion of the well within the outcrop zone. The data will be provided in the outcrop zone report; and
- The outcrop zone reports and subsequent monitoring will be utilized for all APDs for Petrox and Elm Ridge within the Fosset Gulch Unit.

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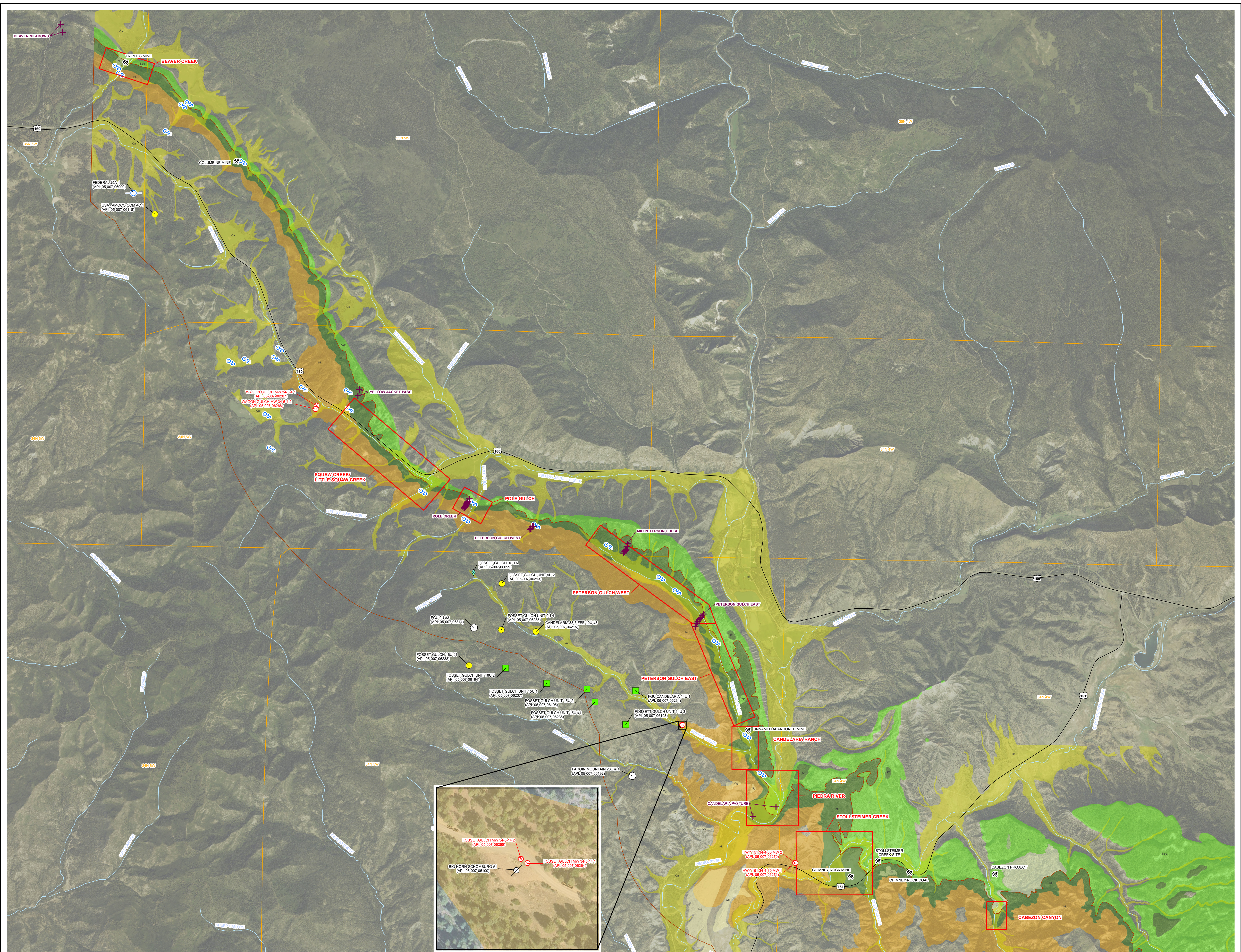
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FIGURES





LEGEND

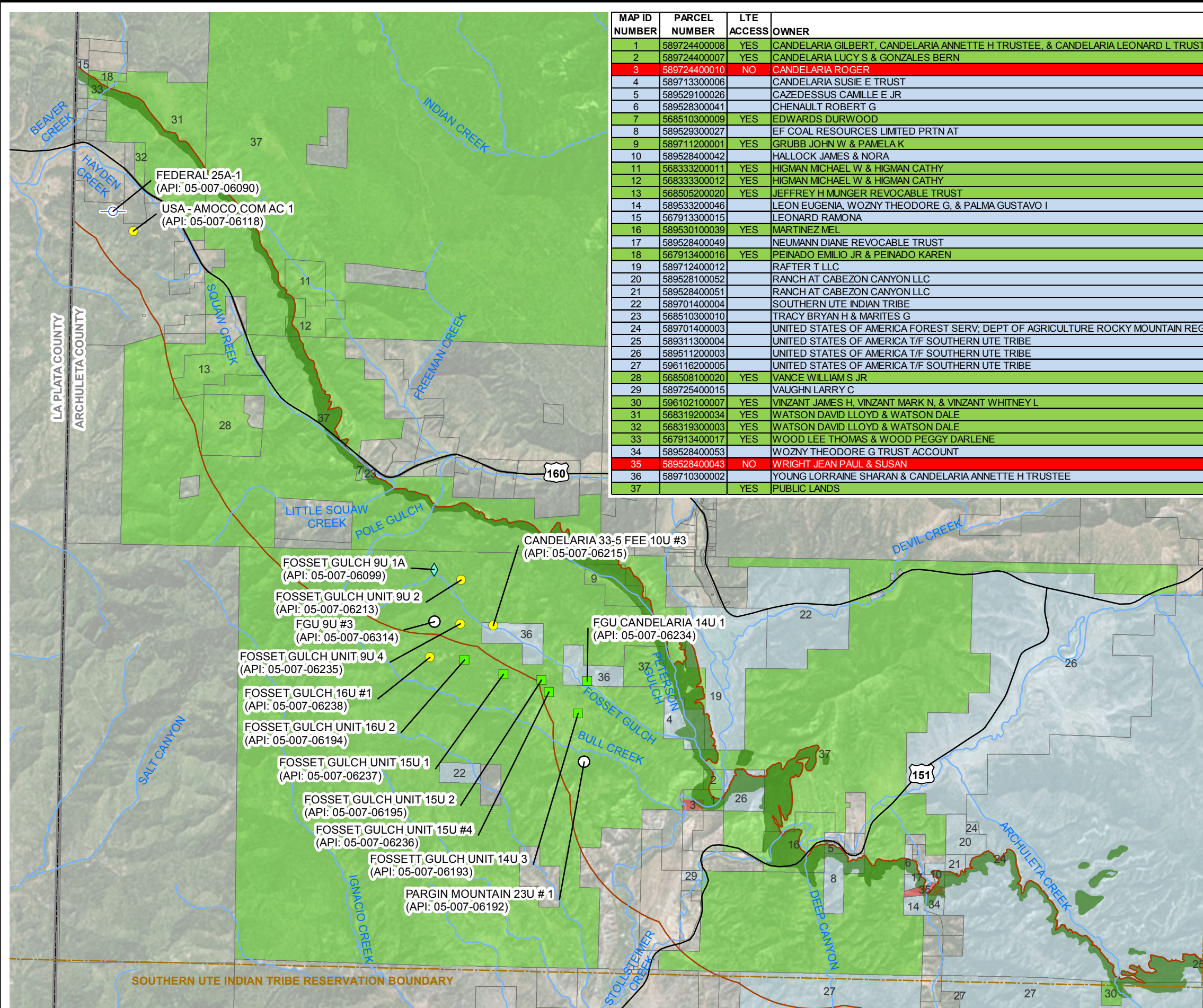
NATURAL SPRING	HIGHWAY	GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011
ABANDONED PRODUCTION WELL	SURFACE WATER	QUATERNARY GRAVEL (Og)
SOIL VAPOR TUBE	AREA OF INTEREST	QUATERNARY ALLUVIUM (Qa)
COLORADO OIL & GAS CONSERVATION COMMISSION WELL	TOWNSHIP AND RANGE LINES	KIRTLAND FORMATION (Kk)
COALBED METHANE WELLS (PETROX RESOURCES, INC.)	BUREAU OF LAND MANAGEMENT OUTCROP ZONE (1.5 MILES INWARD FROM Kf-Kk CONTACT)	FRUITLAND FORMATION (Kf)
PRODUCING		PICTURED CLIFFS FORMATION TONGUE (Kpct)
DRILLING		FRUITLAND FORMATION TONGUE (Kft)
SHUT IN		PICTURED CLIFFS FORMATION (Kpc)
WAITING ON INFORMATION		
PROPOSED WELL		

FIGURE 1
PROJECT AREA MAP
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO

PETROX RESOURCES AND ELM RIDGE RESOURCES

P:\San Juan Basin GIS\Archuleta\Fruitland_CMR\MXD\Subgas_Flux\2015\2015_ARCH_FIG 01 PROJECT AREA MAP.mxd

MAP ID NUMBER	PARCEL NUMBER	LTE ACCESS	OWNER
1	58972440008	YES	CANDELARIA GILBERT, CANDELARIA ANNETTE H TRUSTEE, & CANDELARIA LEONARD L TRUSTEE
2	58972440007	YES	CANDELARIA LUCY S & GONZALES BERN
3	58972440010	NO	CANDELARIA ROGER
4	58971330006		CANDELARIA SUSIE E TRUST
5	589529100026		CAZEDESSUS CAMILLE E JR
6	589528300041		CHENAULT ROBERT G
7	56851030009	YES	EDWARDS DURWOOD
8	589529300027		EF COAL RESOURCES LIMITED PRTN AT
9	589711200001	YES	GRUBB JOHN W & PAMELA K
10	589528400042		HALLOCK JAMES & NORA
11	568333200011	YES	HIGMAN MICHAEL W & HIGMAN CATHY
12	568333300012	YES	HIGMAN MICHAEL W & HIGMAN CATHY
13	568505200020	YES	JEFFREY H MUNGER REVOCABLE TRUST
14	589533200046		LEON EUGENIA, WOZNY THEODORE G, & PALMA GUSTAVO I
15	567913300015		LEONARD RAMONA
16	589530100039	YES	MARTINEZ MEL
17	589528400049		NEUMANN DIANE REVOCABLE TRUST
18	567913400016	YES	PEINADO EMILIO JR & PEINADO KAREN
19	589712400012		RAFTER T LLC
20	589528100052		RANCH AT CABEZON CANYON LLC
21	589528400051		RANCH AT CABEZON CANYON LLC
22	589701400004		SOUTHERN UTE INDIAN TRIBE
23	568510300010		TRACY BRYAN H & MARITES G
24	589701400003		UNITED STATES OF AMERICA FOREST SERV; DEPT OF AGRICULTURE ROCKY MOUNTAIN REGION
25	589311300004		UNITED STATES OF AMERICA T/F SOUTHERN UTE TRIBE
26	589511200003		UNITED STATES OF AMERICA T/F SOUTHERN UTE TRIBE
27	596116200005		UNITED STATES OF AMERICA T/F SOUTHERN UTE TRIBE
28	568508100020	YES	VANCE WILLIAM S JR
29	589725400015		VAUGHN LARRY C
30	596102100007	YES	VINZANT JAMES H, VINZANT MARK N, & VINZANT WHITNEY L
31	568319200034	YES	WATSON DAVID LLOYD & WATSON DALE
32	568319300003	YES	WATSON DAVID LLOYD & WATSON DALE
33	567913400017	YES	WOOD LEE THOMAS & WOOD PEGGY DARLENE
34	589528400053		WOZNY THEODORE G TRUST ACCOUNT
35	589528400043	NO	WRIGHT JEAN PAUL & SUSAN
36	589710300002		YOUNG LORRAINE SHARAN & CANDELARIA ANNETTE H TRUSTEE
37		YES	PUBLIC LANDS



LEGEND

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◆ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL
- HIGHWAY
- SURFACE WATER
- - - SOUTHERN UTE INDIAN TRIBE RESERVATION BOUNDARY
- ▭ COUNTY BOUNDARY
- ▭ BUREAU OF LAND MANAGEMENT OUTCROP ZONE (1.5 MILES INWARD FROM Kf-Kk CONTACT)

GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- FRUITLAND FORMATION (Kf)

2015 PROPERTY ACCESS STATUS

- ACCESS APPROVED
- ACCESS DENIED
- NO RESPONSE

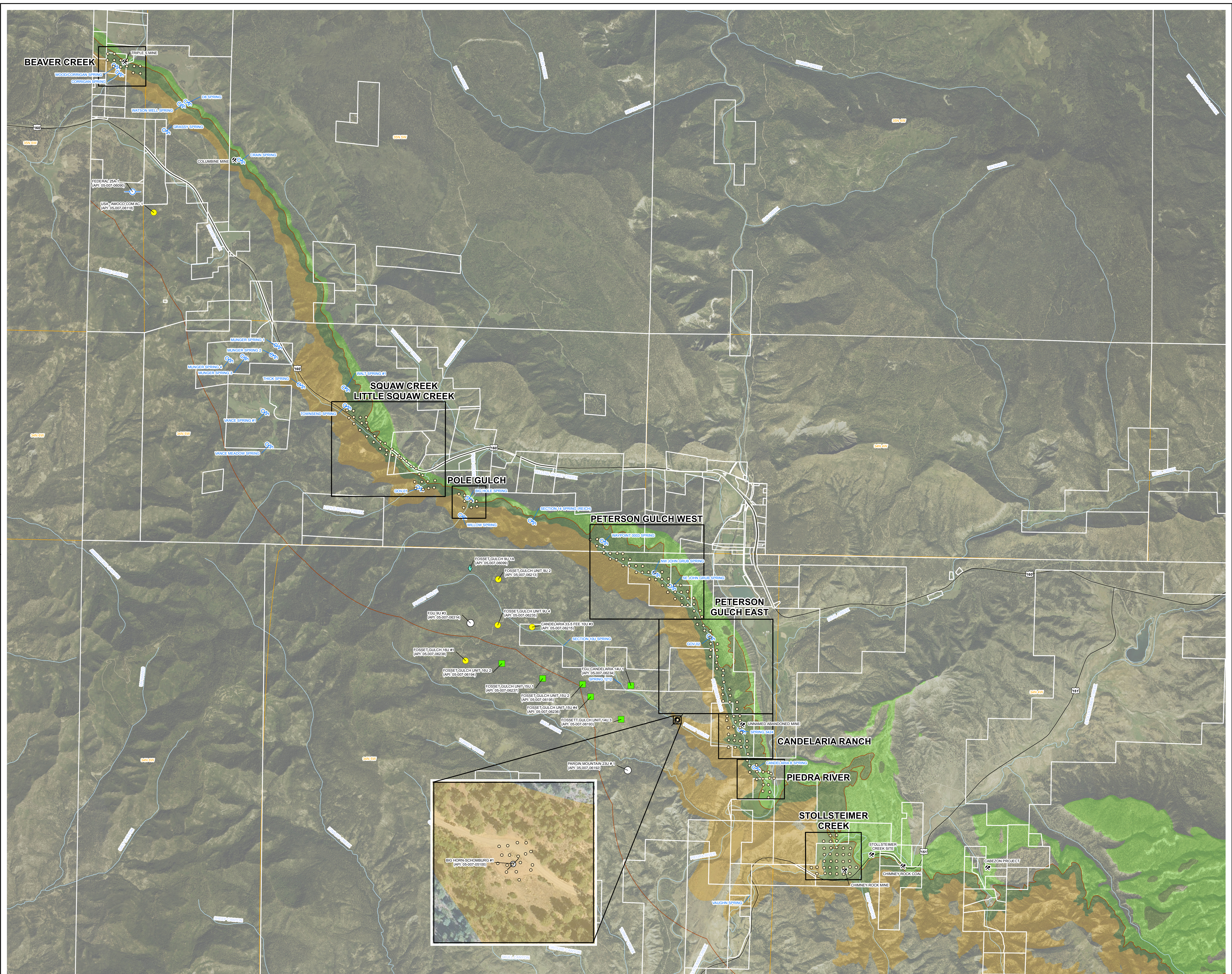
IMAGE COURTESY OF ESRI

0 1.25 2.5
Miles

FIGURE 2
PROPERTY ACCESS MAP
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO

PETROX RESOURCES AND ELM RIDGE RESOURCES





LEGEND

<p>METHANE FLUX MEASUREMENT (mol/m² · day)</p> <ul style="list-style-type: none"> ○ 0.0000 - 0.1999 ○ 0.2000 - 0.5000 ○ 0.5001 - 1.0000 ○ 1.0001 - 10.0000 ○ 10.0001 - 50.0000 ○ 50.0001 - 100.0000 ○ 100.0001 - 200.0000 	<p>COALBED METHANE WELLS (PETROX RESOURCES, INC.)</p> <ul style="list-style-type: none"> ● PRODUCING ◆ DRILLING ○ SHUT IN ■ WAITING ON INFORMATION ○ PROPOSED WELL 	<ul style="list-style-type: none"> ○ NATURAL SPRING ⊗ ABANDONED MINE ⊗ ABANDONED PRODUCTION WELL — HIGHWAY — SURFACE WATER — PROPERTY BOUNDARY & OWNER (WHITE) 	<ul style="list-style-type: none"> — BUREAU OF LAND MANAGEMENT OUTCROP ZONE (1.5 MILES INWARD FROM Kf-kk CONTACT) — DRAINAGE TRANSECT — TOWNSHIP AND RANGE LINES <p>GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011</p> <ul style="list-style-type: none"> — KIRTLAND FORMATION (Kk) — FRUITLAND FORMATION (Kf) — PICTURED CLIFFS FORMATION (Kpc)
--	--	--	---

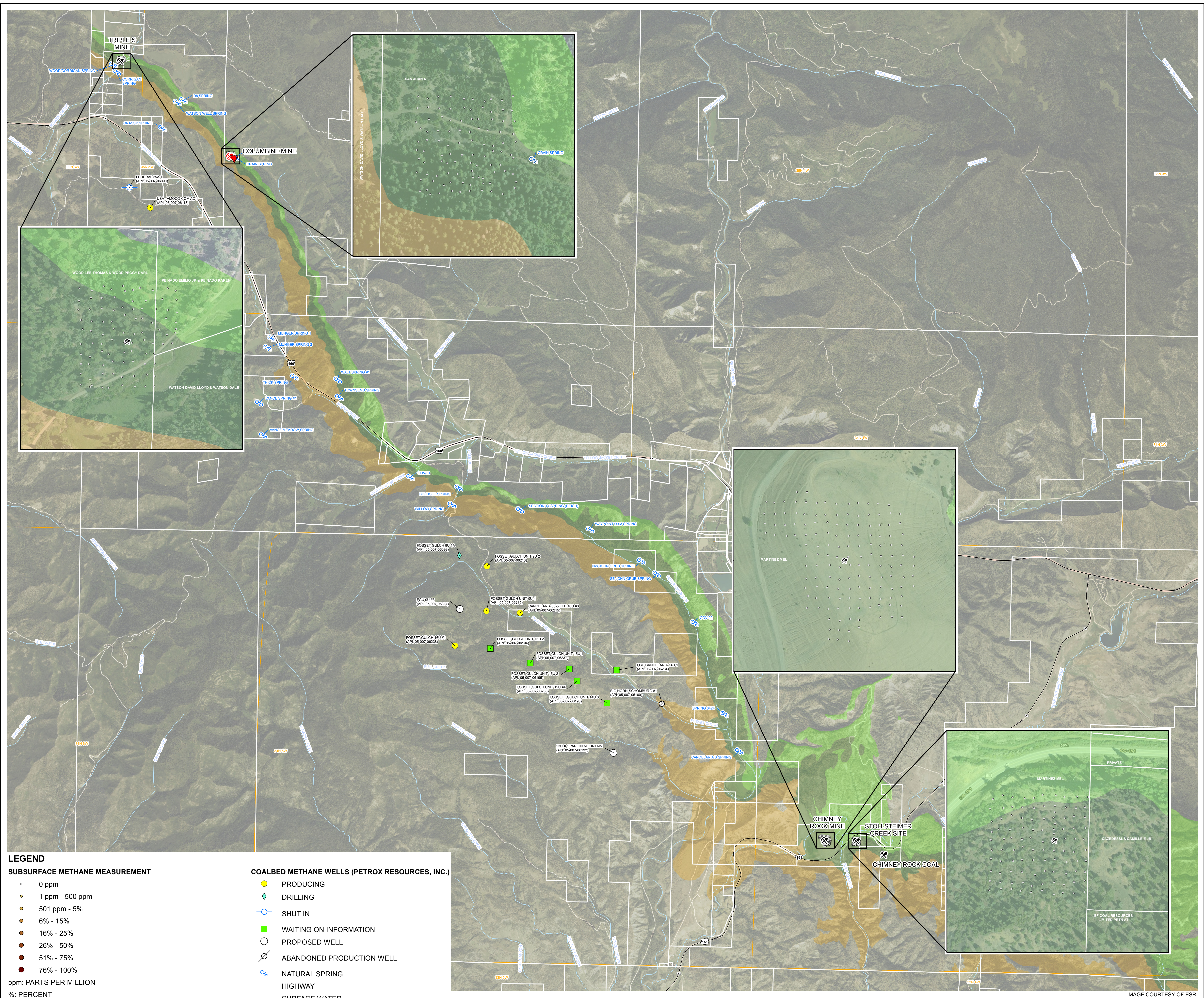
mol/m² · day: MOLES PER SQUARE METER PER DAY

IMAGE COURTESY OF ESRI

FIGURE 3
DRAINAGE TRANSECTS SURVEY
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO

PETROX RESOURCES AND ELM RIDGE RESOURCES

P:\San Juan Basin GIS\Archuleta\Fruitland_OMR\MXDs\Subgas_Flux\2015\2015_ARCH_FIG 03 DRAINAGE TRANSECTS.mxd



LEGEND

SUBSURFACE METHANE MEASUREMENT

- 0 ppm
- 1 ppm - 500 ppm
- 501 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50%
- 51% - 75%
- 76% - 100%

ppm: PARTS PER MILLION
%: PERCENT
ONLY MEASUREMENTS GREATER THAN 0 ppm ARE LABELED

- ✂ MINE ENTRANCE
- ✂ COLLAPSED MINE ENTRANCE
- ▼ COLLAPSED SHAFT

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◆ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL
- ABANDONED PRODUCTION WELL
- NATURAL SPRING
- HIGHWAY
- SURFACE WATER
- PROPERTY BOUNDARY (WHITE)
- TOWNSHIP AND RANGE LINES

GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- KIRTLAND FORMATION (Kk)
- FRUITLAND FORMATION (Kf)
- PICTURED CLIFFS FORMATION (Kpc)

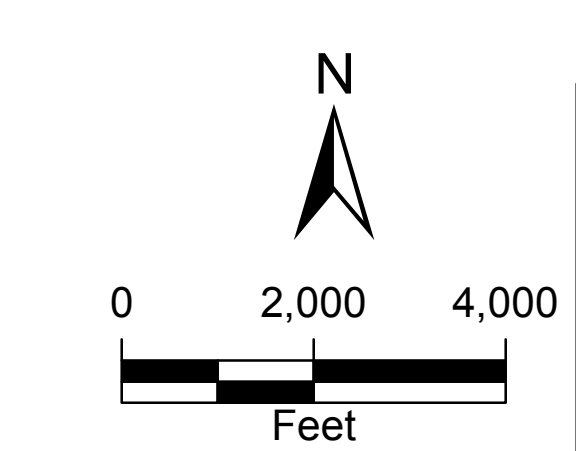
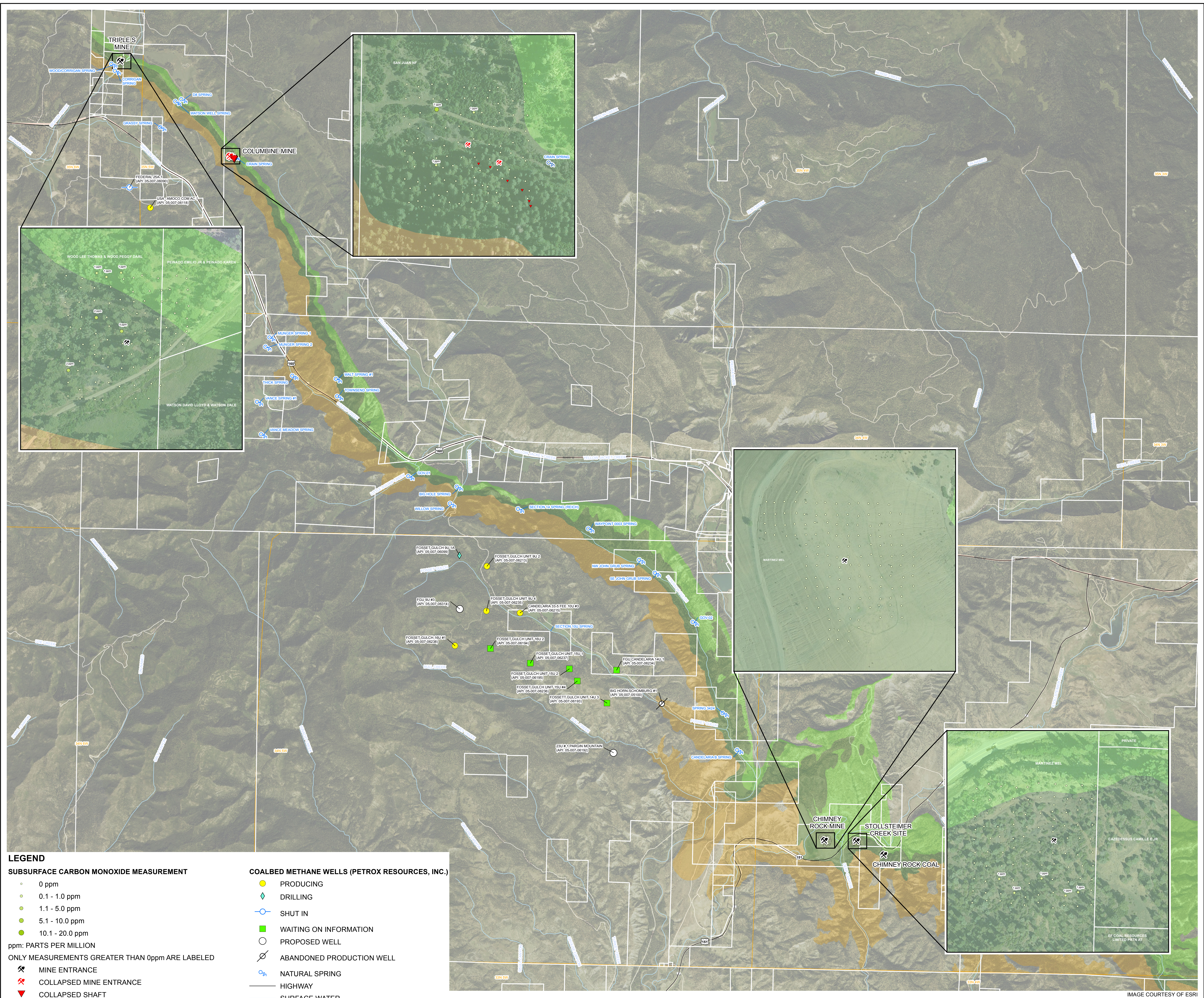


FIGURE 4
METHANE SOIL GAS MEASUREMENTS
ABANDONED COAL MINES
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO
PETROX RESOURCES AND ELM RIDGE RESOURCES



P:\San Juan Basin GIS\Archuleta\Fruitland_OMR\MXDs\Subgas_Flux\2015\2015_ARCH_FIG 04 MINES CH4.mxd



LEGEND

SUBSURFACE CARBON MONOXIDE MEASUREMENT

- 0 ppm
- 0.1 - 1.0 ppm
- 1.1 - 5.0 ppm
- 5.1 - 10.0 ppm
- 10.1 - 20.0 ppm

ppm: PARTS PER MILLION

ONLY MEASUREMENTS GREATER THAN 0ppm ARE LABELED

- ⚡ MINE ENTRANCE
- ⚡ COLLAPSED MINE ENTRANCE
- ⚡ COLLAPSED SHAFT

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◇ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL
- ⊘ ABANDONED PRODUCTION WELL
- NATURAL SPRING
- HIGHWAY
- SURFACE WATER
- PROPERTY BOUNDARY (WHITE)
- TOWNSHIP AND RANGE LINES

GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- KIRTLAND FORMATION (Kk)
- FRUITLAND FORMATION (Kf)
- PICTURED CLIFFS FORMATION (Kpc)

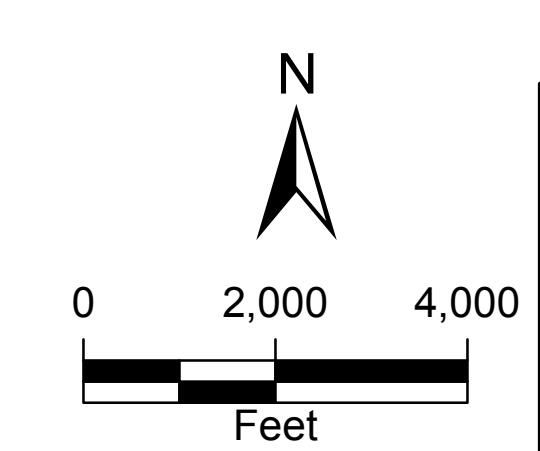
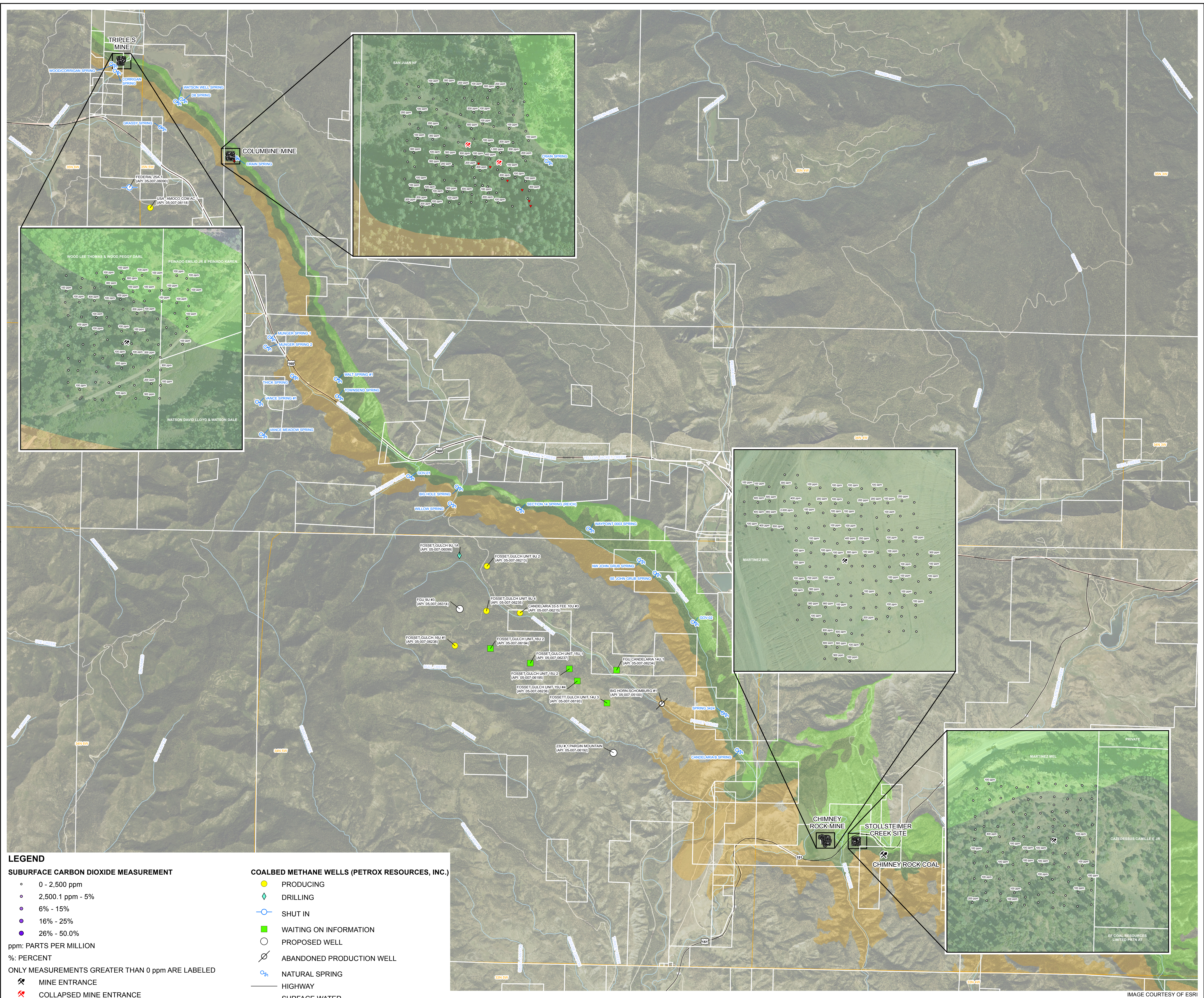


FIGURE 5
CARBON MONOXIDE GAS MEASUREMENTS
ABANDONED COAL MINES
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO
PETROX RESOURCES AND ELM RIDGE RESOURCES



P:\San Juan Basin GIS\Archuleta\Fruitland_OMRM\KDE\Subgas_Flux\2015\2015_ARCH_FIG 05 MINES CO.mxd

IMAGE COURTESY OF ESRI



LEGEND

SUBSURFACE CARBON DIOXIDE MEASUREMENT

- 0 - 2,500 ppm
- 2,500.1 ppm - 5%
- 6% - 15%
- 16% - 25%
- 26% - 50.0%

ppm: PARTS PER MILLION
%: PERCENT

ONLY MEASUREMENTS GREATER THAN 0 ppm ARE LABELED

- ⚡ MINE ENTRANCE
- ⚡ COLLAPSED MINE ENTRANCE
- ▼ COLLAPSED SHAFT

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◆ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL
- ABANDONED PRODUCTION WELL
- NATURAL SPRING
- HIGHWAY
- SURFACE WATER
- PROPERTY BOUNDARY (WHITE)
- TOWNSHIP AND RANGE LINES

GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- KIRTLAND FORMATION (Kk)
- FRUITLAND FORMATION (Kf)
- PICTURED CLIFFS FORMATION (Kpc)

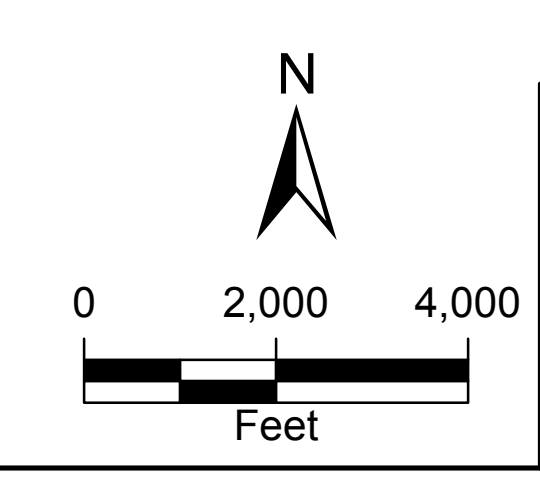
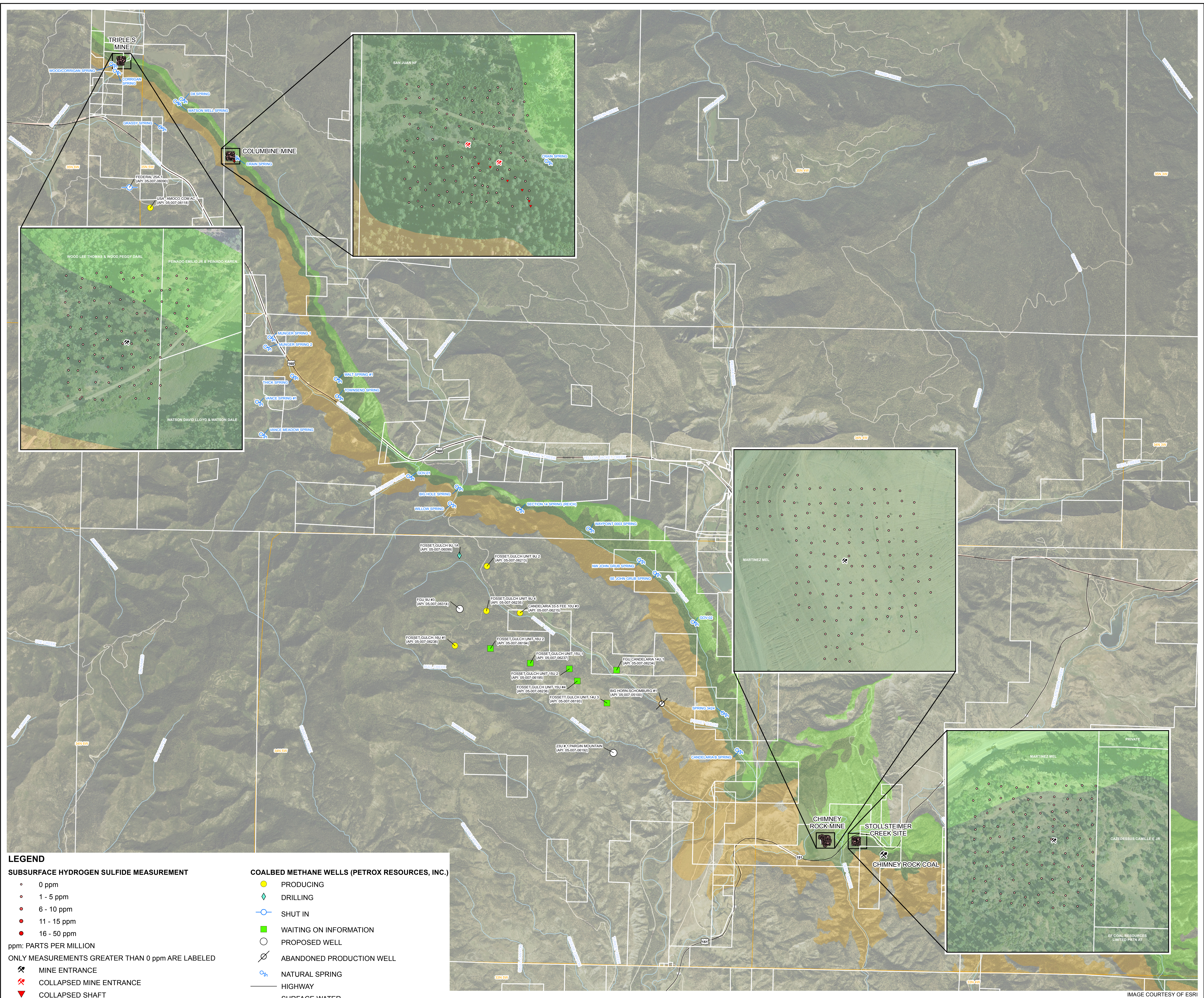


FIGURE 6
CARBON DIOXIDE SOIL GAS MEASUREMENTS
ABANDONED COAL MINES
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO
PETROX RESOURCES AND ELM RIDGE RESOURCES



P:\San Juan Basin GIS\Archuleta\Fruitland_OMR\MXDs\Subgas_Flux\2015\2015_ARCH_FIG 06 MINES CO2.mxd



LEGEND

SUBSURFACE HYDROGEN SULFIDE MEASUREMENT

- 0 ppm
- 1 - 5 ppm
- 6 - 10 ppm
- 11 - 15 ppm
- 16 - 50 ppm

ppm: PARTS PER MILLION

ONLY MEASUREMENTS GREATER THAN 0 ppm ARE LABELED

- ⚡ MINE ENTRANCE
- ⚡ COLLAPSED MINE ENTRANCE
- ▼ COLLAPSED SHAFT

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◆ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL
- ABANDONED PRODUCTION WELL
- NATURAL SPRING
- HIGHWAY
- SURFACE WATER
- PROPERTY BOUNDARY (WHITE)
- TOWNSHIP AND RANGE LINES

GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- KIRTLAND FORMATION (Kk)
- FRUITLAND FORMATION (Kf)
- PICTURED CLIFFS FORMATION (Kpc)

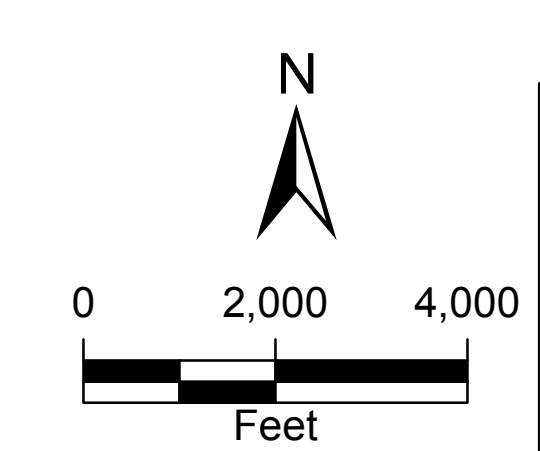
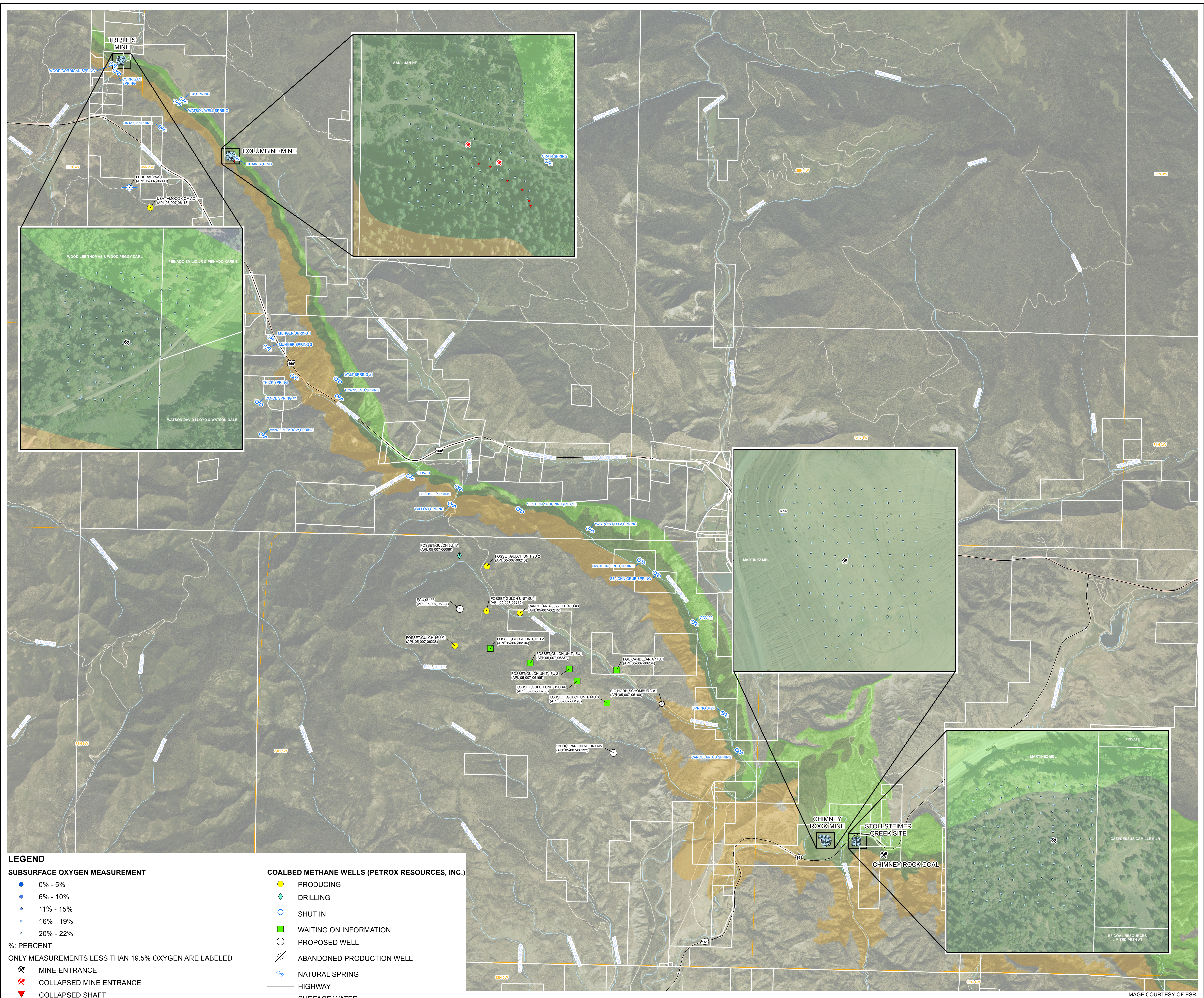


FIGURE 7
HYDROGEN SULFIDE SOIL GAS MEASUREMENTS
ABANDONED COAL MINES
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO
PETROX RESOURCES AND ELM RIDGE RESOURCES



P:\San Juan Basin GIS\Archuleta\Fruitland_OMR\MXD\Subgas_Flux\2015\2015_ARCH_FIG 07 MINES H2S.mxd



LEGEND

SUBSURFACE OXYGEN MEASUREMENT

- 0% - 5%
- 6% - 10%
- 11% - 15%
- 16% - 19%
- 20% - 22%

%: PERCENT

ONLY MEASUREMENTS LESS THAN 19.5% OXYGEN ARE LABELED

- ⚡ MINE ENTRANCE
- ⚡ COLLAPSED MINE ENTRANCE
- ▼ COLLAPSED SHAFT

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◆ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL
- ABANDONED PRODUCTION WELL
- NATURAL SPRING

GEOLGY - COLORADO GEOLOGICAL SURVEY, 2011

- KIRTLAND FORMATION (Kk)
- FRUITLAND FORMATION (Kf)
- PICTURED CLIFFS FORMATION (Kpc)

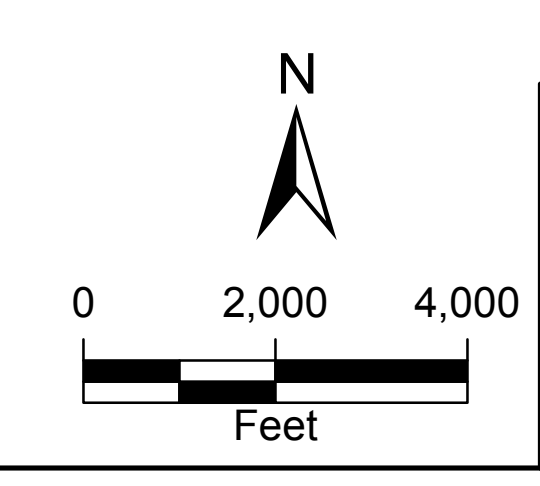
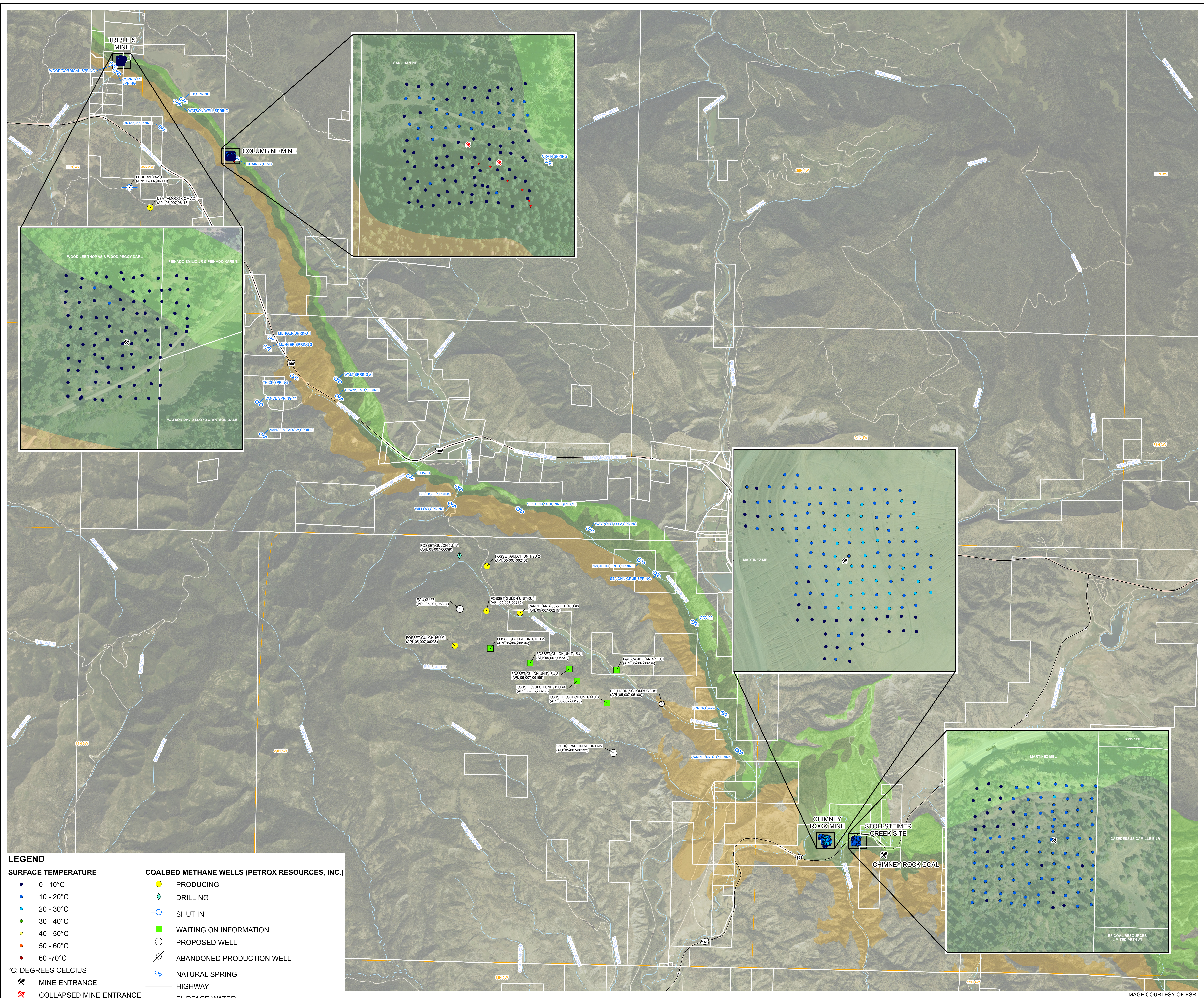


FIGURE 8
OXYGEN SOIL GAS MEASUREMENTS
ABANDONED COAL MINES
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO
PETROX RESOURCES AND ELM RIDGE RESOURCES



P:\San Juan Basin GIS\Archuleta\Fruitland_OMR\XDRs\Subgas_Flux\2015\2015_ARCH_FIG 08 MINES 02.mxd



LEGEND

SURFACE TEMPERATURE

- 0 - 10°C
- 10 - 20°C
- 20 - 30°C
- 30 - 40°C
- 40 - 50°C
- 50 - 60°C
- 60 - 70°C

°C: DEGREES CELCIUS

⚡ MINE ENTRANCE

⚡ COLLAPSED MINE ENTRANCE

⚡ COLLAPSED SHAFT

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◆ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL
- ABANDONED PRODUCTION WELL
- NATURAL SPRING

— HIGHWAY

— SURFACE WATER

— PROPERTY BOUNDARY (WHITE)

— TOWNSHIP AND RANGE LINES

GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- KIRTLAND FORMATION (Kk)
- FRUITLAND FORMATION (Kf)
- PICTURED CLIFFS FORMATION (Kpc)

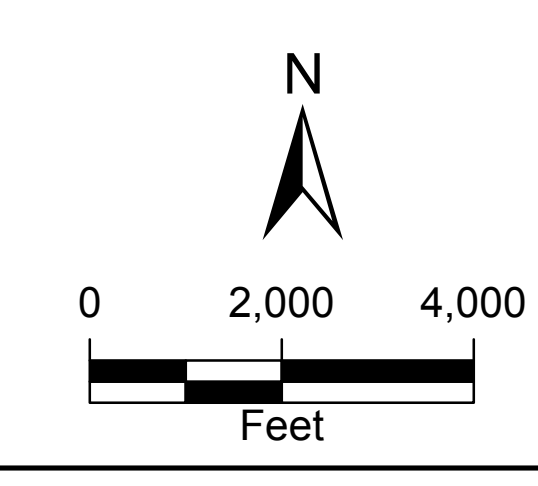
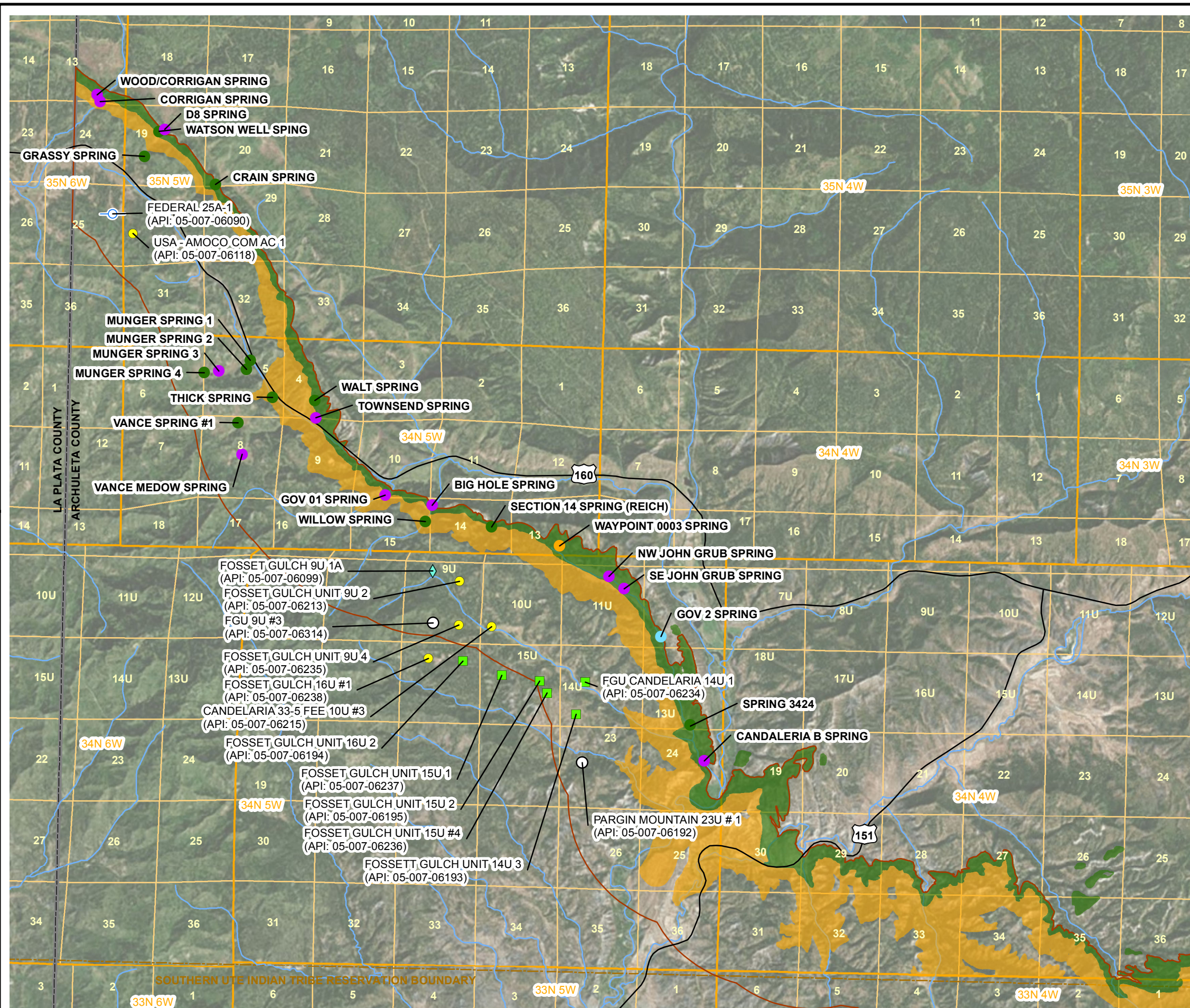


FIGURE 9
SURFACE TEMPERATURE SOIL GAS MEASUREMENTS
ABANDONED COAL MINES
2014 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO
PETROX RESOURCES AND ELM RIDGE RESOURCES



P:\San Juan Basin GIS\Archuleta\Fruitland_OMR\MXD\Subgas_Flux\2015\2015_ARCH_FIG 09 MINES TEMP.mxd

IMAGE COURTESY OF ESRI



LEGEND

COALBED METHANE WELLS (PETROX RESOURCES, INC.)

- PRODUCING
- ◆ DRILLING
- SHUT IN
- WAITING ON INFORMATION
- PROPOSED WELL

2015 NATURAL SPRING STATUS

- SAMPLED
- FIELD PARAMETERS ONLY
- DRY
- NOT LOCATED

- HIGHWAY
- SURFACE WATER
- ▭ COUNTY BOUNDARY
- ▭ SOUTHERN UTE INDIAN TRIBE RESERVATION BOUNDARY
- ▭ TOWNSHIP AND RANGE LINES
- ▭ SECTION
- ▭ BUREAU OF LAND MANAGEMENT OUTCROP ZONE

GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- FRUITLAND FORMATION (Kf)
- KIRKLAND FORMATION (Kk)

SUBSURFACE METHANE MEASUREMENTS WERE COLLECTED FROM TEMPORARY SOIL PROBES ADVANCED WITH A SLIDE HAMMER AT EACH SAMPLED NATURAL SPRING LOCATION. THE CONCENTRATION OF SUBSURFACE METHANE WAS 0.0 PARTS PER MILLION METHANE FOR ALL MEASUREMENTS TAKEN.

IMAGE COURTESY OF ESRI

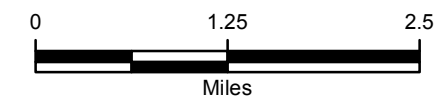


FIGURE 10
NATURAL SPRINGS STATUS
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO

PETROX RESOURCES AND ELM RIDGE RESOURCES



TABLES



**TABLE 1
PROPERTY OWNER AND ACCESS INFORMATION
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO**

PETROX RESOURCES, INC. AND ELM RIDGE RESOURCES, INC.

PID	ACCOUNT	LANDOWNER	ACCESS Y/N	DATE
589724400007	R016001	CANDELARIA LUCY S & GONZALES BERN	Y	5/7/15
568510300009	R002240	EDWARDS DURWOOD	Y	5/15/14
589711200001	R015986	GRUBB JOHN W & PAMELA K	Y	5/7/15
568333200011 & 568333300012	R002224	HIGMAN MICHAEL W & HIGMAN CATHY	Y	5/7/15
589530100039	R015973	MARTINEZ MEL	Y	N/A
567913400016	R002183	PEINADO EMILIO JR & PEINADO KAREN	Y	5/7/15
568508100020	R002236	VANCE WILLIAM S JR	Y	5/8/15
596102100007	R016098	VINZANT JAMES H, VINZANT MARK N, & VINZANT WHITNEY L	Y	5/7/15
567913400017	R002184	WOOD LEE THOMAS & WOOD PEGGY DARLENE	Y	5/7/15
568319300003 & 568319200034	R002206	WATSON DAVID LLOYD & WATSON DALE	Y	5/7/15
589724400008	R016002	CANDELARIA GILBERT, CANDELARIA ANNETTE H TRUSTEE, & CANDELARIA LEONARD L TRUSTEE	Y	5/7/15
568505200020	R002232	JEFFREY H MUNGER REVOCABLE TRUST	Y	5/7/15
589701400003	R015982	UNITED STATES OF AMERICA FOREST SERV; DEPT OF AGRICULTURE ROCKY MOUNTAIN REGION	Y	N/A
589529100026	R015968	CAZEDESSUS CAMILLE E JR	No Response	N/A
589529300027	R015970	EF COAL RESOURCES LIMITED PRTN AT	No Response	N/A
589528400042	R015960	HALLOCK JAMES & NORA	No Response	N/A
589533200046	R015976	LEON EUGENIA, WOZNY THEODORE G, & PALMA GUSTAVO I	No Response	N/A
567913300015	R002181	LEONARD RAMONA	No Response	N/A
589528400049	R015962	NEUMANN DIANE REVOCABLE TRUST	No Response	N/A
589712400012	R018233	RAFTER T LLC	No Response	N/A
589528400051 & 589528100052	R015964	RANCH AT CABEZON CANYON LLC	No Response	N/A
568510300010	R002241	TRACY BRYAN H & MARITES G	No Response	N/A
589725400015	R016008	VAUGHN LARRY C	No Response	N/A
589528400053	R015965	WOZNY THEODORE G TRUST ACCOUNT	No Response	N/A
589710300002 & 589710300002	R015985	YOUNG LORRAINE SHARAN & CANDELARIA ANNETTE H TRUSTEE	No Response	N/A
589713300006	R015998	CANDELARIA SUSIE E TRUST	No Response	N/A
589528300041	R015959	CHENAULT ROBERT G	No Response	N/A
589701400004		SOUTHERN UTE INDIAN TRIBE	N	N/A
589311300004, 596116200005, & 589511200003	R015184	UNITED STATES OF AMERICA T/F SOUTHERN UTE TRIBE	N	N/A
589724400010	R016003	CANDELARIA ROGER	N	5/7/15
589528400043	R015961	WRIGHT JEAN PAUL & SUSAN	N	5/8/15

Notes:

Green indicates access was granted

Red indicated access was not granted

White indicates a response was not received and therefore was considered not granted

N/A - not applicable



**TABLE 3
NATURAL SPRINGS SAMPLING STATUS
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO**

PETROX RESOURCES, INC. AND ELM RIDGE RESOURCES, INC.

NATURAL SPRING	MONTH AND YEAR											
	September 2005	May/June 2006	October 2007	October 2008	May 2009	October 2009	July 2010	May 2011	May 2012	May 2013	May 2014	May/June 2015
Beaver Creek	Not Sampled	Not Sampled	Not Sampled	Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Discontinued*	Discontinued*	Discontinued*
Big Hole Spring	Not Sampled	Sampled	Not Sampled	Dry	Not Located	Not Located	Dry	Dry	Not Sampled	Dry	Dry	Not Located
Candelaria A Spring	Not Sampled	Not Sampled	Not Sampled	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access
Candelaria B Spring	Not Sampled	Sampled	Not Sampled	No Access	No Access	No Access	No Access	No Access	No Access	Dry	Dry	No Access
Corrigan Spring	Not Sampled	Not Sampled	Not Sampled	Not Located	Sampled	Dry	Dry	Sampled	Sampled	Dry	Dry	Dry
Crain Spring	Not Sampled	Sampled	Not Sampled	Sampled	Sampled	Dry	Sampled	No Access	Sampled	Sampled	Dry	Sampled
D8 Spring	--	--	--	--	--	--	--	--	--	--	--	Dry
Gov-1 Spring	--	--	--	--	--	--	--	--	--	Dry	Dry	Dry
Gov-2 Spring	--	--	--	--	--	--	--	--	--	Sampled	Sampled	Dry
Gov-3 Spring	--	--	--	--	--	--	--	--	--	Not Located	Dry	Not Located
Grassy Spring	Not Sampled	Sampled	Sampled	No Access	No Access	No Access	No Access	No Access	Sampled	Sampled	Sampled	Sampled
High Watson Spring	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	Not Sampled	No Access	Not Sampled	Discontinued**	Discontinued**	Discontinued**
Miser Spring & Pipeline	Not Sampled	Not Sampled	Not Sampled	No Access	No Access	No Access	No Access	No Access	No Access	Discontinued**	Discontinued**	Discontinued**
Munger Spring 1	--	--	--	--	--	--	--	--	--	Dry	Sampled	Sampled
Munger Spring 2	--	--	--	--	--	--	--	--	--	Sampled	Dry	Sampled
Munger Spring 3	--	--	--	--	--	--	--	--	--	Dry	Dry	Dry
Munger Spring 4	--	--	--	--	--	--	--	--	--	Dry	Dry	Sampled
NW John Grubb Spring	Sampled	Sampled	Sampled	Sampled	Sampled	Dry	Sampled	Sampled	Sampled	Dry	Dry	Dry
Ramona Leonard Spring (Mona)	Not Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	No Access	No Access	No Access	No Access	No Access	No Access
Ramona Spring	Not Sampled	Not Sampled	Not Sampled	Dry	Not Located	Not Located	No Access	No Access	No Access	No Access	No Access	No Access
SE John Grubb Spring	Sampled	Sampled	Sampled	Sampled	Sampled	Dry	Not Sampled	Sampled	Sampled	Dry	Dry	Dry
Section 10U Spring	Sampled	Sampled	Not Sampled	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access
Section 14 (Reich) Spring	Sampled	Sampled	Sampled	Sampled	Sampled	Dry	Sampled	No Access	Not Sampled	Sampled	Sampled	Sampled
Seep Spring	Not Sampled	Not Sampled	Not Sampled	Dry	Not Located	Not Located	Not Located	Not Located	Dry	Not Located	Not Located	Not Located
Spring 1212	Sampled	Sampled	Not Sampled	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access
Spring 3424	Sampled	Sampled	Not Sampled	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access	Sampled
Thick Spring	Not Sampled	Sampled	Sampled	Not Located	Sampled	Dry	Not Sampled	Sampled	Sampled	Sampled	Dry	Sampled
Townsend Spring	Not Sampled	Not Sampled	Not Sampled	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
Vance Meadow Spring	Not Sampled	Sampled	Sampled	Sampled	Sampled	Dry	Dry	Sampled	Sampled	Dry	Dry	Dry
Vance Spring #1	Not Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Vaughn Spring	Not Sampled	Not Sampled	Not Sampled	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access	No Access
Walt Spring #1	Not Sampled	Sampled	Not Sampled	Dry	Dry	Dry	Dry	Sampled	Dry	Sampled	Dry	Sampled
Watson Well Spring	Not Sampled	Sampled	Not Sampled	Sampled	Sampled	Sampled	Sampled	No Access	Sampled	Sampled	Sampled	Sampled
Waypoint 0003 Spring	Not Sampled	NS	Not Sampled	Not Located	Not Located	Not Located	Not Sampled	Not Located	Dry	Not Located	Not Located	Not Located
Willow Spring	Not Sampled	Sampled	Sampled	Sampled	Sampled	Dry	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Wood/Corrigan Spring	Not Sampled	Not Sampled	Not Sampled	Dry	Sampled	Dry	Not Sampled	Sampled	Dry	Dry	Dry	Dry

Note:
 -- denotes not part of the sampling program for that year
 * natural spring discontinued from sampling program due to its location in vicinity of Corrigan Spring
 **natural spring discontinued from sampling program due to location of spring outside of Kf outcrop and/or BLM outcrop zone
 Kf - Fruitland Formation
 BLM - Bureau of Land Management



**TABLE 4
NATURAL SPRINGS FIELD OBSERVATIONS AND MEASUREMENTS
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO**

PETROX RESOURCES, INC. AND ELM RIDGE RESOURCES, INC.

Natural Spring	2015 Field Observations/ Notes	Date	Water Quality Field Measurements				
			Conductivity (µS/cm)	pH (Units)	ORP (mV)	Temperature (°C)	TDS (ppm)
Beaver Creek	Discontinued*	September 2005	--	--	--	--	--
		May 2006	--	--	--	--	--
		October 2007	286.6	8.00	21.0	10.0	146.60
		October 2008	303.0	7.40	166.0	5.8	197.00
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	Discontinued*				
		May 2014	Discontinued*				
		May 2015	Discontinued*				
		Big Hole Spring	Not Located	September 2005	--	--	--
May 2006	365.5			7.27	141.0	11.7	249.10
October 2007	--			--	--	--	--
October 2008	--			--	--	--	--
June 2009	--			--	--	--	--
October 2009	--			--	--	--	--
July 2010	--			--	--	--	--
May 2011	--			--	--	--	--
May 2012	--			--	--	--	--
May 2013	--			--	--	--	--
May 2014	--			--	--	--	--
May 2015	--			--	--	--	--
Candelaria A Spring	Not Sampled due to access			September 2005	--	--	--
		May 2006	--	--	--	--	--
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		June 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		May 2015	--	--	--	--	--
		Candelaria B Spring	Not Sampled due to access	September 2005	--	--	--
May 2006	--			--	--	--	--
October 2007	--			--	--	--	--
October 2008	--			--	--	--	--
June 2009	--			--	--	--	--
October 2009	--			--	--	--	--
July 2010	--			--	--	--	--
May 2011	--			--	--	--	--
May 2012	--			--	--	--	--
May 2013	--			--	--	--	--
May 2014	--			--	--	--	--
May 2015	--			--	--	--	--
Corrigan Spring	Dry			September 2005	--	--	--
		June 2006	170.3	6.08	122.0	17.7	109.70
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	253.0	6.83	97.4	22.5	126.00
		May 2012	162.3	6.53	-45.2	11.5	81.20
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		June 2015	--	--	--	--	--
		Crain Spring	Sampled	September 2005	--	--	--
June 2006	570.3			7.50	-115.0	29.1	375.30
October 2007	--			--	--	--	--
October 2008	526.0			7.47	273.0	8.8	342.00
May 2009	811.0			6.87	--	7.5	--
October 2009	--			--	--	--	--
July 2010	482.0			6.80	--	11.8	--
May 2011	--			--	--	--	--
May 2012	--			--	--	--	--
May 2013	668.0			7.70	--	20.5	334.00
May 2014	--			--	--	--	--
June 2015	445.5			7.44	89.8	14.6	295.78
D8 Spring	Dry			June 2015	--	--	--
Gov-1 Spring	Dry	May 2013	--	--	--	--	
		May 2014	--	--	--	--	
		May 2015	--	--	--	--	
Gov-2 Spring	Dry	May 2013	659.0	7.00	17.4	10.2	328.00
		May 2014	510.0	6.90	--	13.1	--
		May 2015	--	--	--	--	--
Gov-3 Spring	Not Located	May 2013	--	--	--	--	
		May 2014	--	--	--	--	
		May 2015	--	--	--	--	
Grassy Spring	Sampled	September 2005	--	--	--	--	--
		June 2006	570.3	7.50	-115.0	29.1	375.30
		October 2007	88.4	8.18	16.0	8.6	44.32
		October 2008	--	--	--	--	--
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	954.0	7.00	--	14.3	480.00
		May 2014	654.0	6.50	148.0	11.9	--
		June 2015	629.9	6.91	112.4	11.6	410.00



**TABLE 4
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ARCHULETA COUNTY, COLORADO**

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Natural Spring	2015 Field Observations/ Notes	Date	Water Quality Field Measurements				
			Conductivity (µS/cm)	pH (Units)	ORP (mV)	Temperature (°C)	TDS (ppm)
High Watson Spring	Discontinued**	September 2005	--	--	--	--	--
		June 2006	--	--	--	--	--
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	789.0	7.49	18.1	16.7	392.00
		May 2013	Discontinued**				
		May 2014	Discontinued**				
		May 2015	Discontinued**				
Miser Spring and Pipeline	Discontinued**	September 2005	--	--	--	--	--
		June 2006	--	--	--	--	--
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		June 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	Discontinued**				
		May 2014	Discontinued**				
		May 2015	Discontinued**				
Munger Spring 1	Sampled	May 2013	--	--	--	--	--
		May 2014	107.0	7.00	185.0	13.9	--
		June 2015	550.0	6.92	96.6	13.6	352.36
Munger Spring 2	Sampled	May 2013	358.0	7.40	--	18.9	176.00
		May 2014	--	--	--	--	--
		June 2015	320.4	6.88	57.2	13.1	207.60
Munger Spring 3	Dry	May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		June 2015	--	--	--	--	--
Munger Spring 4	Sampled	May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		June 2015	424.7	7.33	84.3	18.7	260.78
NW John Grub Spring	Dry	September 2005	415.8	6.97	--	15.8	282.30
		May 2006	421.7	7.83	108.0	27.0	275.90
		October 2007	292.2	7.28	-162.0	17.1	254.80
		October 2008	425.0	7.07	-15.0	15.7	276.00
		June 2009	339.0	8.70	--	14.5	--
		October 2009	--	--	--	--	--
		July 2010	441.0	5.91	--	16.4	--
		May 2011	561.0	7.08	21.7	21.0	278.00
		May 2012	540.0	6.77	20.3	22.0	271.00
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		May 2015	--	--	--	--	--
Ramona Leonard Spring (Mona)	Not Sampled due to access	September 2005	--	--	--	--	--
		May 2006	768.4	6.35	107.0	13.5	522.40
		October 2007	793.5	7.68	42.0	11.8	413.40
		October 2008	879.0	6.99	185.6	9.7	571.00
		May 2009	793.0	6.97	--	9.1	--
		October 2009	825.0	7.24	--	10.0	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		May 2015	--	--	--	--	--
Ramona Spring	Not sampled due to access	September 2005	--	--	--	--	--
		June 2006	--	--	--	--	--
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		May 2015	--	--	--	--	--
SE John Grub Spring	Dry	September 2005	524.5	7.04	--	15.6	358.50
		May 2006	509.5	7.86	-49.0	24.4	336.90
		October 2007	980.1	7.29	-68.0	18.4	513.00
		October 2008	528.0	7.18	63.5	12.4	342.00
		June 2009	542.0	6.58	12.0	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	428.0	7.08	16.0	23.6	213.00
		May 2012	341.0	7.13	-18.1	25.6	170.00
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		May 2015	--	--	--	--	--
Section 10U Spring	Not sampled due to access	September 2005	458.1	7.27	131.0	10.9	314.70
		May 2006	489.9	7.18	521.0	20.0	328.20
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		June 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		May 2015	--	--	--	--	--



**TABLE 4
NATURAL SPRINGS FIELD OBSERVATIONS AND MEASUREMENTS
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Natural Spring	2015 Field Observations/ Notes	Date	Water Quality Field Measurements				
			Conductivity (µS/cm)	pH (Units)	ORP (mV)	Temperature (°C)	TDS (ppm)
Section 14 (Reich) Spring	Sampled	September 2005	412.2	7.93	--	20.2	277.50
		May 2006	372.9	7.48	79.0	13.3	251.50
		October 2007	394.7	7.92	0.0	10.7	198.70
		October 2008	445.0	7.09	45.0	8.6	290.00
		June 2009	607.0	6.89	--	9.0	--
		October 2009	--	--	--	NM	--
		July 2010	404.0	6.77	--	10.7	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	661.0	7.30	37.4	8.0	329.00
		May 2014	464.0	6.60	--	8.5	--
May 2015	544.4	6.40	40.2	8.3	302.00		
Seep Spring	Not located	September 2005	--	--	--	--	--
		May 2006	--	--	--	--	--
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
May 2015	--	--	--	--	--		
Spring 1212	Not sampled due to access	October 2005	420.0	6.59	--	9.1	--
		June 2006	356.6	7.29	75.0	15.3	243.90
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
May 2015	--	--	--	--	--		
Spring 3424	Not Sampled due to access	September 2005	725.2	6.86	71.0	16.5	504.00
		May 2006	641.5	7.97	-98.0	17.3	436.70
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		June 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
July 2015	1,004.2	6.64	130.2	12.9	652.73		
Thick Spring	Sampled	September 2005	--	--	--	--	--
		May 2006	325.6	7.80	120.0	11.7	214.60
		October 2007	376.5	7.74	32.0	12.9	192.20
		October 2008	--	--	--	--	--
		May 2009	54.6	7.52	--	12.3	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	408.0	7.01	40.0	11.4	203.00
		May 2012	457.0	6.51	22.6	7.1	229.00
		May 2013	836.0	7.10	69.7	12.4	448.00
		May 2014	--	--	--	--	--
May 2015	551.3	6.85	94.1	7.9	358.31		
Townsend Spring	Dry	September 2005	--	--	--	--	--
		May 2006	--	--	--	--	--
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		May 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
May 2015	--	--	--	--	--		
Vance Meadow Spring	Dry	September 2005	--	--	--	--	--
		June 2006	459.9	7.20	-60.0	16.5	310.90
		October 2007	389.8	7.20	-67.0	12.2	195.10
		October 2008	476.0	7.90	249.6	8.0	308.00
		June 2009	455.0	7.23	--	13.7	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	365.0	7.24	22.9	16.9	182.00
		May 2012	360.0	8.30	33.1	18.1	179.00
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
June 2015	--	--	--	--	--		
Vance Spring #1	Sampled	September 2005	--	--	--	--	--
		May 2006	404.0	7.75	-12.0	11.6	269.60
		October 2007	417.1	7.34	519.0	9.6	213.20
		October 2008	464.0	7.20	120.3	7.2	302.00
		May 2009	399.0	7.88	--	12.8	--
		October 2009	481.0	7.41	--	6.8	--
		July 2010	421.0	7.13	--	15.8	--
		May 2011	298.0	6.72	6.0	10.7	151.00
		May 2012	332.0	6.86	51.2	8.7	166.00
		May 2013	505.0	6.90	30.9	15.4	253.00
		May 2014	324.0	7.80	67.8	15.9	--
June 2015	299.4	7.54	95.0	16.8	194.91		



TABLE 4
NATURAL SPRINGS FIELD OBSERVATIONS AND MEASUREMENTS
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PETROX RESOURCES, INC. AND ELM RIDGE RESOURCES, INC.

Natural Spring	2015 Field Observations/ Notes	Date	Water Quality Field Measurements				
			Conductivity (µS/cm)	pH (Units)	ORP (mV)	Temperature (°C)	TDS (ppm)
Vaughn Spring	Not Sampled due to access	September 2005	--	--	--	--	--
		June 2006	730.7	7.55	521.0	20.1	509.50
		October 2007	--	--	--	--	--
		October 2008	--	--	--	--	--
		June 2009	--	--	--	--	--
		October 2009	--	--	--	--	--
		July 2010	--	--	--	--	--
		May 2011	--	--	--	--	--
		May 2012	--	--	--	--	--
		May 2013	--	--	--	--	--
		May 2014	--	--	--	--	--
		May 2015	--	--	--	--	--
		Walt Spring #1	Sampled	September 2005	--	--	--
May 2006	524.0			7.90	86.0	12.1	345.40
October 2007	--			--	--	--	--
October 2008	--			--	--	--	--
May 2009	--			--	--	--	--
October 2009	--			--	--	--	--
July 2010	--			--	--	--	--
May 2011	207.0			7.41	93.2	11.4	155.00
May 2012	--			--	--	--	--
May 2013	512.0			6.90	92.7	13.0	242.00
May 2014	--			--	--	--	--
May 2015	321.0			7.43	136.8	14.4	214.85
Watson Well Spring	Sampled			September 2005	--	--	--
		June 2006	745.5	7.29	34.0	13.0	507.70
		October 2007	--	--	--	--	--
		October 2008	869.0	6.90	273.2	13.9	565.00
		May 2009	705.0	6.90	--	9.9	--
		October 2009	852.0	6.90	--	13.4	--
		July 2010	570.0	6.75	--	17.8	--
		May 2011	--	--	--	--	--
		May 2012	836.0	6.46	9.5	20.3	418.00
		May 2013	903.0	7.20	--	10.3	453.00
		May 2014	654.0	6.40	148.0	11.9	--
		June 2015	708.1	6.99	93.9	14.0	460.35
		Waypoint 0003 Spring	Not Located	September 2005	--	--	--
May 2006	--			--	--	--	--
October 2007	--			--	--	--	--
October 2008	--			--	--	--	--
June 2009	--			--	--	--	--
October 2009	--			--	--	--	--
July 2010	--			--	--	--	--
May 2011	--			--	--	--	--
May 2012	--			--	--	--	--
May 2013	--			--	--	--	--
May 2014	--			--	--	--	--
May 2015	--			--	--	--	--
Willow Spring	Sampled			September 2005	--	--	--
		May 2006	252.9	7.39	122.0	14.0	178.70
		October 2007	318.3	7.42	508.0	13.9	161.40
		October 2008	325.0	7.09	243.4	6.6	211.00
		June 2009	285.0	7.54	--	10.4	--
		October 2009	--	--	--	--	--
		July 2010	284.0	6.70	--	12.4	--
		May 2011	277.0	6.30	116.5	10.4	139.00
		May 2012	335.0	6.79	29.5	10.6	167.00
		May 2013	341.0	7.20	35.9	14.2	172.00
		May 2014	263.0	7.20	298.2	7.4	--
		May 2015	328.2	7.12	84.4	9.4	214.79
		Wood/Corrigan Spring	Dry	September 2005	--	--	--
June 2006	--			--	--	--	--
October 2007	--			--	--	--	--
October 2008	--			--	--	--	--
May 2009	480.0			6.96	--	7.5	--
October 2009	--			--	--	--	--
July 2010	--			--	--	--	--
May 2011	476.0			7.13	279.2	12.1	241.00
May 2012	--			--	--	--	--
May 2013	--			--	--	--	--
July 2014	--			--	--	--	--
June 2015	--			--	--	--	--

Notes:

- µS/cm - microSiemens per centimeter °C - degrees celsius -- denotes not measured
- ORP - oxidation reduction potential TDS - total dissolved solids
- mV - millivolts ppm - parts per million
- * natural spring discontinued from sampling program due to its location in vicinity of Corrigan Spring
- **natural spring discontinued from sampling program due to location of spring outside of Kf outcrop and/or BLM outcrop zone



TABLE 5
NATURAL SPRINGS WATER FLOW RATE MEASUREMENTS
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO

PETROX RESOURCES, INC. AND ELM RIDGE RESOURCES, INC.

NATURAL SPRING	FLOW RATES (Gallons/Minute)											
	September 2005	May/June 2006	October 2007	October 2008	May/June 2009	October 2009	July 2010	May 2011	May 2012	May 2013	May 2014	May/June 2015
Beaver Creek	--	--	7.00	--	--	--	--	--	--	Discontinued*	--	--
Big Hole Spring	--	<1	--	--	--	--	--	--	--	--	--	--
Candelaria A Spring	--	--	--	--	--	--	--	--	--	--	--	--
Candelaria B Spring	--	--	--	--	--	--	--	--	--	--	--	--
Corrigan Spring	--	--	--	--	--	--	--	--	--	--	--	--
Crain Spring	--	--	--	0.20	2.66	--	2.00	--	--	0.04	--	0.25
D8 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Gov-1 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Gov-2 Spring	--	--	--	--	--	--	--	--	--	0.35	--	--
Gov-3 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Grassy Spring	--	--	<0.25	--	--	--	--	--	--	0.11	--	0.38
High Watson Spring	--	--	--	--	--	--	--	--	--	Discontinued**	--	--
Miser Spring & Pipeline	--	--	--	--	--	--	--	--	--	Discontinued**	--	--
Munger Spring 1	--	--	--	--	--	--	--	--	--	--	--	0.18
Munger Spring 2	--	--	--	--	--	--	--	--	--	0.16	--	0.19
Munger Spring 3	--	--	--	--	--	--	--	--	--	--	--	--
Munger Spring 4	--	--	--	--	--	--	--	--	--	--	--	--
NW John Grub Spring	0.10	<1	<0.5	0.90	--	--	--	--	--	--	--	--
Ramona Leonard Spring (Mona)	--	0.60	0.40	0.75	1.30	0.24	--	--	--	--	--	--
Ramona Spring	--	--	--	--	--	--	--	--	--	--	--	--
SE John Grub Spring	0.25	<1	<0.25	0	--	--	--	--	--	--	--	--
Section 10U Spring	0.90	1.00	--	--	--	--	--	--	--	--	--	--
Section 14 (Reich) Spring	--	<1	<0.5	0	1.50	--	1.30	--	--	2.18	--	--
Seep Spring	--	--	--	--	--	--	--	--	--	--	--	--
Spring 1212	--	5.28	--	--	--	--	--	--	--	--	--	--
Spring 3424	1.00	1.00	--	--	--	--	--	--	--	--	--	--
Thick Spring	--	2.00	<1	--	--	--	--	0.20	0.15	0.12	--	0.61
Townsend Spring	--	--	--	--	--	--	--	--	--	--	--	--
Vance Meadow Spring	--	<0.5	<0.5	0	--	--	0.27	0.20	--	--	--	--
Vance Spring #1	--	1.00	<0.5	0	1.90	0.20	--	0.40	0.53	0.14	--	0.04
Vaughn Spring	--	<1	--	--	--	--	--	--	--	--	--	--
Walt Spring #1	--	--	<1	--	--	--	--	0.40	--	0.14	--	0.52
Watson Well Spring	--	--	--	--	--	--	--	--	0.88	--	--	--
Waypoint 0003 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Willow Spring	--	1.00	<0.25	0.03	0.60	--	0.50	0.30	1.06	0.24	--	--
Wood/Corrigan Spring	--	--	--	--	--	--	--	0.30	--	--	--	--

Notes:

-- denotes no measurement taken

< - less than designated flow rate

* natural spring discontinued from sampling program due to its location in vicinity of Corrigan Spring

**natural spring discontinued from sampling program due to location of spring outside of Kf outcrop and/or BLM outcrop zone



TABLE 6
NATURAL SPRINGS ANALYTICAL RESULTS - DISSOLVED METHANE
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO

PETROX RESOURCES, INC. AND ELM RIDGE RESOURCES, INC.

NATURAL SPRING	METHANE CONCENTRATIONS (mg/L)											
	September 2005	May/June 2006	October 2007	October 2008	May/June 2009	October 2009	July 2010	May 2011	May 2012	May 2013	May 2014	May/June/July 2015
Beaver Creek	--	NS	<0.02	<0.02	--	--	--	--	--	Discontinued*	Discontinued*	Discontinued*
Big Hole Spring	--	0.0010	--	--	--	--	--	--	--	--	--	--
Candelaria A Spring	--	--	--	--	--	--	--	--	--	--	--	--
Candelaria B Spring	--	--	--	--	--	--	--	--	--	--	--	--
Corrigan Spring	--	<0.001	--	--	<0.02	--	--	<0.02	<0.02	--	--	--
Crain Spring	--	0.0067	--	<0.02	<0.02	--	<0.02	--	--	<0.02	--	<0.2
D8 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Gov-1 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Gov-2 Spring	--	--	--	--	--	--	--	--	--	<0.02	<0.02	--
Gov-3 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Grassy Spring	--	--	<0.02	--	--	--	--	--	--	<0.02	<0.02	<0.2
High Watson Spring	--	--	--	--	--	--	--	--	--	Discontinued**	Discontinued**	Discontinued**
Miser Spring & Pipeline	--	--	--	--	--	--	--	--	--	Discontinued**	Discontinued**	Discontinued**
Munger Spring 1	--	--	--	--	--	--	--	--	--	--	--	<0.2
Munger Spring 2	--	--	--	--	--	--	--	--	--	<0.02	<0.02	<0.2
Munger Spring 3	--	--	--	--	--	--	--	--	--	--	--	--
Munger Spring 4	--	--	--	--	--	--	--	--	--	--	--	<0.2
NW John Grub Spring	0.015	0.0016	0.30	0.0300	0.07	--	0.07	0.03	0.27	--	--	--
Ramona Leonard Spring (Mona)	<0.0005	<0.001	<0.02	<0.02	<0.02	<0.02	--	--	--	--	--	--
Ramona Spring	--	--	--	--	--	--	--	--	--	--	--	--
SE John Grub Spring	<0.0005	0.0025	0.6500	<0.02	0.02	--	--	0.023	0.29	--	--	--
Section 10U Spring	<0.0005	0.0062	--	--	--	--	--	--	--	--	--	--
Section 14 (Reich) Spring	0.0006	<0.001	0.0200	0.0200	<0.02	--	--	--	--	<0.02	<0.02	<0.2
Seep Spring	--	--	--	--	--	--	--	--	--	--	--	--
Spring 1212	0.0005	<0.001	--	--	--	--	--	--	--	--	--	--
Spring 3424	0.0017	0.0230	--	--	--	--	--	--	--	--	--	<0.2
Thick Spring	--	<0.001	<0.02	--	<0.02	--	--	<0.02	<0.02	<0.02	<0.02	<0.2
Townsend Spring	--	--	--	--	--	--	--	--	--	--	--	--
Vance Meadow Spring	--	0.0110	0.06	<0.02	<0.02	--	--	<0.02	<0.02	--	--	--
Vance Spring #1	--	0.0220	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	--	<0.2
Vaughn Spring	--	0.0037	--	--	--	--	--	--	--	--	--	--
Walt Spring #1	--	<0.001	--	--	--	--	--	<0.02	--	<0.02	--	<0.2
Watson Well Spring	--	0.0160	--	<0.02	<0.02	<0.02	--	--	<0.02	--	<0.02	<0.2
Waypoint 0003 Spring	--	--	--	--	--	--	--	--	--	--	--	--
Willow Spring	--	<0.001	<0.02	<0.02	<0.02	--	<0.02	--	<0.02	<0.02	<0.02	<0.2
Wood/Corrigan Spring	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

mg/L - milligrams per liter

-- denotes a sample was not collected/analyzed

< - indicates not detected above the detection limit

* natural spring discontinued from sampling program due to its location in vicinity of Corrigan Spring

**natural spring discontinued from sampling program due to location of spring outside of Kf outcrop and/or BLM outcrop zone



**TABLE 7
NATURAL SPRINGS ANALYTICAL RESULTS - MAJOR IONS
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO**

PETROX RESOURCES, INC. AND ELM RIDGE RESOURCES, INC.

Natural Spring	Date	Cations				Anions				
		Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)	Carbonate (mg/L)	Bicarbonate (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	
Beaver Creek	October 2008	35.0	10.70	8.60	1.90	<10	128.0	33.0	<10	
	May 2009	--	--	--	--	--	--	--	--	
	July 2010	--	--	--	--	--	--	--	--	
	May/June 2011	--	--	--	--	--	--	--	--	
	May 2012	--	--	--	--	--	--	--	--	
	May 2013	Discontinued*								
	May 2014	Discontinued*								
May 2015	Discontinued*									
Corrigan Spring	May/June 2011	31.9	7.60	7.20	0.50	<10	64.0	19.0	<10	
	May 2012	21.9	5.02	4.23	1.10	<10	290.0	62.0	<10	
	May 2013	--	--	--	--	--	--	--	--	
	May 2014	--	--	--	--	--	--	--	--	
	June 2015	--	--	--	--	--	--	--	--	
Crain Spring	October 2008	65.6	18.80	15.20	1.60	<10	214.0	98.0	<10	
	May 2009	74.7	21.10	19.60	1.40	<10	230.0	134.0	<10	
	July 2010	68.3	18.30	14.40	1.90	<10	190.0	76.0	<10	
	May 2011	--	--	--	--	--	--	--	--	
	May 2012	--	--	--	--	--	--	--	--	
	May 2013	79.5	21.90	22.50	2.55	<10	179.0	126.0	<10	
	May 2014	--	--	--	--	--	--	--	--	
	June 2015	71.5	21.70	22.00	2.03	<10	250.0	96.0	<20	
Gov-1 Spring	May 2013	--	--	--	--	--	--	--	--	
	May 2014	--	--	--	--	--	--	--	--	
	May 2015	--	--	--	--	--	--	--	--	
Gov-2 Spring	May 2013	80.9	24.60	16.00	1.50	<10	244.0	74.0	<10	
	May 2014	87.7	25.20	15.90	1.23	<10	272.0	72.0	<10	
	May 2015	--	--	--	--	--	--	--	--	
Gov-3 Spring	May 2013	--	--	--	--	--	--	--	--	
	May 2014	--	--	--	--	--	--	--	--	
	May 2015	--	--	--	--	--	--	--	--	
Grassy Spring	May 2012	95.1	27.90	23.80	2.89	12	246.0	158.0	<10	
	May 2013	108.0	34.70	32.10	4.25	<10	216.0	250.0	<10	
	May 2014	98.9	31.00	32.10	4.62	<10	248.0	176.0	50	
	June 2015	99.1	29.80	26.40	2.77	<10	290.0	166.0	120	
Munger Spring 1	May 2014	73.7	15.90	20.90	2.76	<10	162.0	33.0	77	
	June 2015	78.1	17.00	22.00	2.56	<10	155.0	28.7	106	
	May 2013	47.5	8.55	19.60	1.70	<10	117.0	19.0	36	
Munger Spring 2	May 2014	--	--	--	--	--	--	--	--	
	June 2015	42.8	8.07	18.70	2.94	<10	150.0	13.2	34	
	June 2015	78.2	11.10	12.50	1.67	<10	260.0	<10.0	<10	
Munger Spring 4	October 2008	59.1	12.80	<0.5	0.60	<10	187.0	54.0	<10	
	May 2009	30.9	16.00	11.30	0.60	<10	117.0	67.0	<10	
	July 2010	66.1	14.00	12.00	0.80	<10	175.0	71.0	<10	
	May 2011	72.9	18.70	14.50	1.60	<10	230.0	106.0	<10	
	May 2012	84.7	21.90	16.70	2.27	<10	290.0	62.0	<10	
	May 2013	--	--	--	--	--	--	--	--	
	May 2014	--	--	--	--	--	--	--	--	
NW John Grub Spring	October 2008	138.0	27.70	9.60	1.60	<10	200.0	340.0	<10	
	May 2009	120.0	23.10	8.50	1.30	<10	181.0	250.0	<10	
	July 2010	--	--	--	--	--	--	--	--	
	May 2011	--	--	--	--	--	--	--	--	
	May 2012	--	--	--	--	--	--	--	--	
	May 2013	--	--	--	--	--	--	--	--	
	May 2014	--	--	--	--	--	--	--	--	
Ramona Leonard Spring	October 2008	65.3	16.90	14.00	0.70	<10	214.0	78.0	<10	
	May 2009	72.2	16.60	14.30	0.60	10	238.0	57.0	<10	
	July 2010	--	--	--	--	--	--	--	--	
	May 2011	56.1	12.60	11.20	1.30	<10	171.0	60.0	<10	
	May 2012	101.0	27.80	22.00	3.79	<10	300.0	108.0	<10	
	May 2013	--	--	--	--	--	--	--	--	
	May 2014	--	--	--	--	--	--	--	--	
SE John Grub Spring	October 2008	48.8	6.00	27.00	0.60	<10	189.0	43.0	<10	
	May 2009	62.8	6.70	24.50	1.00	10	188.0	61.0	<10	
	July 2010	57.5	6.10	24.70	0.80	<10	169.0	55.0	<10	
	May 2011	--	--	--	--	--	--	--	--	
	May 2012	--	--	--	--	--	--	--	--	
	May 2013	93.8	10.20	26.10	1.25	<10	240.0	75.0	<10	
	May 2014	84.5	9.24	26.80	1.19	<10	222.0	66.0	<10	
May 2015	86.6	9.19	25.20	1.51	<10	252.0	65.0	<10		
Spring 3424	July 2015	124.0	53.00	24.40	2.19	<10	250.0	270.0	<10	
Thick Spring	October 2008	--	--	--	--	--	--	--	--	
	May 2009	44.6	8.20	14.40	0.80	<10	124.0	28.0	22	
	July 2010	--	--	--	--	--	--	--	--	
	May 2011	48.7	9.70	15.60	<0.5	<10	136.0	31.0	32	
	May 2012	51.6	10.50	16.20	1.39	<10	126.0	23.0	36	
	May 2013	49.9	10.40	17.10	2.22	<10	131.0	25.0	40	
	May 2014	--	--	--	--	--	--	--	--	
Vance Meadow Spring	May 2015	65.3	14.20	18.30	1.50	<10	132.0	25.7	71	
	October 2008	68.3	9.00	14.40	2.60	<10	244.0	11.0	<10	
	May 2009	66.7	8.20	14.00	2.70	<10	236.0	11.0	<10	
	July 2010	--	--	--	--	--	--	--	--	
	May 2011	50.1	6.70	12.00	2.20	<10	178.0	<10	<10	
	May 2012	47.8	8.49	16.50	2.36	<10	144.0	27.0	<10	
	May 2013	--	--	--	--	--	--	--	--	
Vance Spring #1	May 2014	--	--	--	--	--	--	--	--	
	May 2015	--	--	--	--	--	--	--	--	
	October 2008	52.5	6.60	13.10	5.90	<10	182.0	19.0	<10	
	May 2009	57.8	7.70	14.30	4.20	<10	208.0	<10	<10	
	July 2010	63.4	8.40	14.90	5.80	<10	226.0	<10	<10	
	May/June 2011	36.6	4.80	10.60	7.50	<10	133.0	16.0	<10	
	May 2012	40.6	5.16	12.20	7.89	<10	125.0	25.0	<10	
	May 2013	47.6	5.90	13.30	12.30	<10	98.0	73.0	<10	
Walt Spring #1	May 2014	45.2	5.44	12.40	8.75	<10	152.0	26.0	<10	
	June 2015	44.7	5.59	13.40	8.48	<10	170.0	16.9	<10	
	May 2011	43.8	13.60	11.70	0.60	<10	141.0	65.0	<10	
	May 2012	--	--	--	--	--	--	--	--	
	May 2013	52.0	16.70	13.20	1.61	<10	149.0	84.0	<10	
	May 2014	--	--	--	--	--	--	--	--	
	May 2015	41.4	13.20	11.10	1.41	<10	140.0	47.9	<10	
Watson Well Spring	October 2008	109.0	38.70	25.50	2.40	<10	394.0	134.0	<10	
	May 2009	86.8	30.70	20.50	1.90	<10	288.0	94.0	<10	
	July 2010	78.1	26.90	18.10	2.50	12	218.0	84.0	<10	
	May 2011	--	--	--	--	--	--	--	--	
	May 2012	102.0	39.40	21.40	2.04	<10	348.0	118.0	<10	
	May 2013	104.0	41.20	20.00	2.35	<10	326.0	108.0	<10	
	May 2014	103.0	40.10	20.40	2.36	<10	324.0	78.0	<10	
Willow Spring	June 2015	98.4	39.20	19.20	2.36	<10	340.0	85.6	<10	
	October 2008	39.3	5.80	16.50	1.40	<10	157.0	19.0	<10	
	May 2009	34.5	5.10	16.10	1.40	<10	122.0	18.0	<10	
	July 2010	39.2	5.70	16.30	1.80	<10	131.0	16.0	<10	
	May 2011	32.7	5.20	14.90	1.00	<10	129.0	16.0	<10	
	May 2012	38.0	5.81	16.90	1.17	<10	132.0	20.0	<10	
	May 2013	35.7	5.72	17.00	1.23	<10	124.0	27.0	<10	
Wood Spring	May 2014	--	--	--	--	--	--	--	--	
	May 2015	40.8	6.43	17.50	1.52	<10	152.0	21.9	11	
	October 2008	--	--	--	--	--	--	--	--	
	May 2009	65.7	11.60	10.70	1.60	<10	142.0	122.0	<10	
	July 2010	--	--	--	--	--	--	--	--	
	May 2011	66.9	12.80	10.40	0.80	<10	135.0	126.0	<10	
	May 2012	21.9	5.02	4.23	1.10	<10	64.0	19.0	<10	
May 2013	--	--	--	--	--	--	--	--		
May 2014	--	--	--	--	--	--	--	--		
June 2015	--	--	--	--	--	--	--	--		

Notes:
 mg/L - milligrams per liter
 -- denotes not sampled/analyzed
 < - less than the laboratory reporting limit
 * natural spring discontinued from sampling program due to its location in vicinity of Corrigan Spring



APPENDIX A
TWG MEETING MEMOS



MEMORANDUM

DATE: September 18, 2012 / **Revised November 29, 2012**

TO: Technical Working Group (TWG)

FROM: LT Environmental, Inc. (LTE)

SUBJECT: Technical Working Group Meeting #1 Summary

TECHNICAL WORKING GROUP MEETING #1

Meeting #1 represents the first TWG to discuss, evaluate, and assess Petrox Resources, Inc. (Petrox) and Elm Ridge Resources, Inc. (Elm Ridge) 2011 Outcrop Zone Report, which was developed in response to Decision Point 5 of the Record of Decision from the Northern San Juan Basin (NSJB) Final Environmental Impact Statement (FEIS), prepared by the Bureau of Land Management (BLM) and the United States Forest Service (USFS). Below is a list of action items that were agreed to at the end of meeting #1.

Outcrop Monitoring Plan

LTE will propose a modified outcrop monitoring plan based on the work conducted over the past 8 years. The plan will include:

- Annual methane gas seep monitoring in the major drainages using a modified grid spacing and grid extent;
- Regional reconnaissance every three years using infrared imagery and field verification;
- Annual natural spring sampling; and
- Quarterly mine surveys once Fosset Gulch Unit production begins for the first year followed by annual surveys unless results suggest otherwise.

Annual Reporting

LTE will prepare an annual Outcrop Zone Report to include the following components:

- Format in accordance with the April 2012 report;
- Annual outcrop monitoring results;
- Evaluation and analysis of new data and changes within the Project Area; and
- Gas and water production data from all Petrox coalbed methane (CBM) wells within the Fosset Gulch Unit.

Other Items of Discussion

The other key points of discussion during the meeting were as follows:

- No new monitoring wells will be required at this time;



- Petrox will incorporate water chemistry data from new production wells drilled prior to bringing them online per the COGCC conditions of approval. The data will be presented in the 2012 Outcrop Zone Report;
- Petrox will collect and provide initial downhole pressure data for all new drill production wells prior to bringing them online. The data will be used in evaluating reservoir production efficiency and in evaluating the Mansoori modeling efforts;
- The Outcrop Zone Report, dated April 2012, will be revised to include the edits to the executive summary, the coal desorption data, the 100 bwpd per well on page 2-9, and the specific edits in the last paragraph of the executive summary pertaining to mitigation as described by Pam Leschak (BLM) and Karen Spray (COGCC);
- Petrox will evaluate reservoir pressure data from new drills as they occur and conduct periodic model runs similar to the initial Mansoori effort to monitor the actual reservoir behavior in comparison to the initial predictive effort. The frequency of this activity will be dependent on the data available. Results will be presented in the Outcrop Zone Report when available;
- Petrox will commit to utilizing a new CBM production well such as the 10U#4 or the ~~16U#1~~ 9U#3 (revised by DRM on 11/29/2012) or an existing well for pressure monitoring for a period of no more the 3 months following completion of the well. The data will be provided to the TWG for review and evaluation. In addition, the data and TWG conclusions will be incorporated into the Outcrop Zone Report; and
- The Outcrop Zone Report and subsequent monitoring will be utilized for all Applications for Permits to Drill (APDs) within the Fosset Gulch Unit for Petrox.



MEMORANDUM

DATE: December 17, 2012

TO: Technical Working Group (TWG)

FROM: LT Environmental, Inc. (LTE)

SUBJECT: Technical Working Group Meeting #2 Summary

TECHNICAL WORKING GROUP MEETING #2

Attendees

Mike Clark – Petrox Resources, Inc. (Petrox)

Walt Brown – United States Forest Service (USFS)

John Pecor – United States Bureau of Land Management (BLM)

Pam Leschak – BLM

Kyle Siesser – Southern Ute Indian Tribe (SUIT)

Karen Spray – Colorado Oil and Gas Conservation Commission (COGCC)

Ivan Geroy – USFS

Daniel Moir – LTE

Mark Weems with the COGCC and Richard Rymerson with the BLM could not attend the meeting. Archuleta County was invited to have a representative attend the meeting; however, no representative for Archuleta County attended the meeting.

Meeting #2 represents the second meeting of the TWG to discuss, evaluate, and assess Petrox Resources, Inc. (Petrox) and Elm Ridge Resources, Inc. (Elm Ridge) coalbed methane (CBM) production wells within the mile and a half outcrop zone related to the Fruitland Formation (Kf) outcrop in Archuleta County, Colorado. The mile and a half outcrop zone was developed in the Record of Decision (ROD) for the Northern San Juan Basin (NSJB) Final Environmental Impact Statement (FEIS).

This meeting was convened to discuss topics related to the NSJB Stakeholder comments related to the 2011 Outcrop Zone Report and associated APD application for the 10U#3 production well. The TWG also discussed scheduling for the 10U#3 and proposed 9U#3 CBM wells. Below is a summary of topics and action items discussed during the second meeting of the TWG.

NSJB Stakeholder Comments

The TWG discussed comments from the NSJB Stakeholders regarding the 10U#3 APD and associated 2011 Outcrop Zone Report. The three main issues are listed below with TWG comments for each issue:

1. Natural Spring Sampling – The NSJB Stakeholders had issues with the quantity of natural spring samples collected compared to the known 28 natural springs identified in the 2011 Outcrop Zone Report. In addition, Mrs. Munger identified several natural springs on her property that have not been sampled to date.

TWG Comments

- In general, natural springs are sampled to compare water chemistry of the springs with the Kf aquifer water. This is used to identify whether natural spring water has communication with the Kf aquifer. Based on natural springs analytical data for the past nine years, the natural springs along the Kf outcrop in Archuleta County have different water chemistry than the Kf aquifer. The natural springs along the Kf outcrop in Archuleta County appear to be fed by snow pack runoff and are not fed by Kf aquifer discharge to the ground surface;
 - LTE emphasizes sampling those natural springs that are on or adjacent to the Kf outcrop. In general, those natural springs that are not sampled annually are either dry at the time of sampling or property access was denied. LTE and Petrox have never denied sampling anyone's natural spring; and in consultation with the TWG, will sample springs/water sources in the outcrop zone upon landholder request if there is some potential that the spring/water source could be impacted by gas field production.
 - LTE has utilized the United States Geological Survey (USGS) topographic maps and the Colorado Division of Water Resources (DWR) database to identify natural springs along the Kf outcrop in Archuleta County. LTE will conduct another inventory of natural springs along the Kf outcrop in Archuleta County prior to the 2013 Kf outcrop monitoring event utilizing existing resources as well as natural spring information from the *Isotopic and Geochemical Analysis of Groundwater-Surface Water Interactions at the Fruitland Outcrop: An Addition to the 4M Project* report by the Mountain State Institute, dated December 10, 2012; and
 - To address landowners that have natural springs on their property that are not included in the previously identified resources, LTE will prepare a questionnaire for landowners that will accompany the 2013 property access letter. The questionnaire will ask if the landowner has natural springs on their property and if so, would they like to have it inspected by LTE field crew during the annual natural spring sampling event. Natural springs identified through the questionnaire or through landowner inquiries will be dealt with on a case-by-case based on natural spring proximity to the Kf outcrop. This will help address those landowners that have natural springs that have not been sampled in the past.
2. Coal fires along the Kf outcrop in Archuleta County – the NSJB Stakeholders are concerned about coal fires, specifically the potential for coal fires near homes and Highway 160.

TWG Comments

- There are currently no active coal fires in Archuleta County. There are currently no active coal fires in La Plata County above the SUIT boundary;



- There are three main causes for surface and near-surface coal fires: 1) lightning strikes to exposed coal that ignites and burns; 2) wildfires that ignite exposed coal; and 3) dewatering of coal where oxygen is present and spontaneous combustion conditions ignite coal and burn;
 - Petrox is not responsible for naturally occurring events that would ignite the Kf outcrop such as lightning strikes or wildfires;
 - Data currently suggests that the production of CBM wells within the outcrop zone would not dewater the Kf enough to create a spontaneous combustion atmosphere. In addition, the depth to the Kf in the Fosset Gulch area and chemical makeup of gases do not indicate that the Kf has enough oxygen to fuel the coals if it were to be dewatered;
 - Monitoring of abandoned coal mines will be conducted by LTE for four consecutive quarters once Fosset Gulch Unit production begins. After the fourth quarterly monitoring event is conducted, the TWG will evaluate the data and determine monitoring frequency moving forward;
 - The TWG will continually evaluate the potential for coal fires based on Petrox CBM productions and modify monitoring as needed; and
 - Coal fires are possible to extinguish/mitigate and the SUIT have successfully extinguished one coal fire on their reservation within the last year. Petrox and LTE would look into the SUIT success in extinguishing their coal fire and evaluate the technical feasibility in the event a coal fire ignites along the Kf outcrop in Archuleta and Petrox is deemed the responsible party.
3. NSJB Stakeholder role in APD process for CBM production wells within the outcrop zone – There is a confusion of what role the NSJB Stakeholders play in the APD approval process for CBM production wells within the mile and half outcrop zone in Archuleta County.

TWG Comments

- NSJB Stakeholders meetings are for information sharing between regulators, industry, and landowners/stakeholders. It is a time for the NSJB Stakeholders to ask questions, share concerns, and make suggestions to regulatory decision makers;
- LTE's 2011 Outcrop Zone Report was prepared based on the Record of Decision (ROD) for the NSJB FEIS in order to have an APD approved by the BLM/USFS. ; and
- The roles and responsibilities of the NSJB Stakeholders Group and the TWG need to be clarified. The USFS, BLM, and LTE will explain the process in more detail at the next Stakeholders Group Meeting.



10U#3 and 9U#3 Schedules

- Petrox is awaiting their injection permit from the EPA for Petrox's produced water injection well to be approved prior to putting the 10U#3 online. Petrox is anticipating approval in February/March 2013;
- The USFS is currently reviewing Petrox's SUPO for the 9U#3, which Petrox was informed during the TWG meeting that a decision on the SUPO and APD should be given by the first week of March 2013. Petrox has tentatively scheduled drilling the 9U#3 (Federal lease) in May 2013. SUPO and APD approval in March, 2013, is necessary for Petrox to give adequate notice to the drilling company to have a drill rig available for the May 2013 drilling schedule, which is essential to keep the downhole pressure data collection schedule on track;
- Petrox will drill the 9U#3 in May 2013 and begin collecting downhole pressure data for three months (August 2013, September 2013, and October 2013), as agreed upon during the first TWG meeting in September 2012, assuming that the Fosset Gulch unit has been producing for approximately six months prior to data collection. Once the three months of downhole pressure data is collected, Petrox will put the 9U#3 online and begin producing CBM; and
- Downhole pressure data collected from the 9U#3 in 2013 will be reviewed and discussed by the TWG during the TWG meeting at the end of 2013, or sooner if results warrant.

Other Items of Discussion

- The next NSJB Stakeholder meeting is scheduled for January 17, 2012. LTE and Petrox will be at the meeting to address Stakeholder concerns and questions. In addition, LTE and the USFS will present a power point to the Stakeholders to explain the process and clear up confusions.
- The 2012 Outcrop Zone Report, prepared by LTE, will be revised to include more information regarding the natural springs and coal fires.
- LTE will bring three hard copies and several compact disc (CD) copies of the 2012 Outcrop Zone Report for the NSJB Stakeholders to take as needed. This will hopefully help those that have troubles printing the report or accessing it through the ftp site that has been provided by LTE.



MEMORANDUM

DATE: March 7, 2013

TO: Technical Working Group (TWG)

FROM: LT Environmental, Inc. (LTE)

SUBJECT: Technical Working Group Meeting #3 Summary

TECHNICAL WORKING GROUP MEETING #3

Attendees

Mike Clark – Petrox Resources, Inc. (Petrox)

Walt Brown – United States Forest Service (USFS)

John Pecor – United States Bureau of Land Management (BLM)

Pam Leschak – BLM

Kyle Siesser – Southern Ute Indian Tribe (SUIT)

Ivan Geroy – USFS

Daniel Moir – LTE

Karen Spray and Mark Weems with the Colorado Oil and Gas Conservation Commission (COGCC) and Brad Dodd with the BLM could not attend the meeting. Archuleta County was invited to have a representative attend the meeting (provided the representative meets technical qualifications for the TWG); however, no representative for Archuleta County attended the meeting.

This meeting represents the third meeting of the TWG to discuss, evaluate, and assess Petrox Resources, Inc. (Petrox) and Elm Ridge Resources, Inc. (Elm Ridge) coalbed methane (CBM) development within the Fruitland Formation (Kf) outcrop zone in Archuleta County, Colorado. The mile and a half outcrop zone was developed in the Record of Decision (ROD) for the Northern San Juan Basin (NSJB) Final Environmental Impact Statement (FEIS).

This meeting was convened to discuss topics related to the NSJB Stakeholder comments related Application for Permit to Drill (APD) for the 9U#3 CBM production well. Below is a summary of topics and action items discussed during the meeting.

Revised Fosset Gulch Unit Schedules

Below is a revised tentative schedule for the Project Area, specifically for the 10U#3 and the 9U#3 CBM production wells:

- Petrox is awaiting approval of their Underground Injection Control (UIC) permit from the EPA for a produced water injection well prior to putting the 10U#3 online. Petrox is anticipating UIC approval in April 2013;
- The USFS is currently reviewing Petrox's Surface Use Plan of Operations (SUPO) for the 9U#3. Petrox was informed by the USFS during the second TWG meeting that the approval of the SUPO should be given by the first week of March 2013. According to the USFS, the approval of the APD for the 9U#3 is also anticipated for the first week of March 2013. Petrox has tentatively scheduled drilling the 9U#3 (Federal lease) in May 2013. SUPO and APD approval in March 2013 is necessary for Petrox to give adequate notice to the drilling company to have a drill rig available for the May 2013 drilling schedule and to keep the downhole pressure data collection schedule on track;
- Petrox will drill the 9U#3 in May 2013, pending APD and SUPO approval, and begin collecting downhole pressure data for three months (August - October 2013) as agreed upon during the first TWG meeting in September 2012. The Fosset Gulch unit is anticipated to begin production in April 2013, pending EPA UIC approval. Assuming production begins in April 2013, there will be approximately three to five months of production prior to downhole pressure data collection from the 9U#3, approximately one month less than discussed during the second TWG meeting in December 2012. Once the three months of downhole pressure data are collected, Petrox will put the 9U#3 online and begin producing CBM. The deadline to bring the 9U#3 online is December 1, 2013, due to forest access restrictions imposed by the USFS; and
- Downhole pressure data collected from the 9U#3 in 2013 will be reviewed and utilized for history matching, confirming permeability, and modeling to revise, if necessary, drainage patterns for the Project. Data and models will be discussed by the TWG during the meeting planned at the end of 2013.

Additional Monitoring Plans

The outcrop monitoring plan is discussed in detail in the 2012 Outcrop Zone Report as well as potential mitigation options if methane seepage and/or coal fires are identified along the Kf outcrop. Below is a summary of additional monitoring actions/trigger mechanisms that will take place for the Fosset Gulch Unit:

- "Step-wise" monitoring approach will be met by bringing on four CBM production wells within the outcrop zone instead of the proposed 16 CBM production wells discussed in Decision Point 5 of the ROD. This will allow review of data for fewer wells and provide easier correlation with four wells instead of sixteen;



- Produced water will be monitored during production. If there is an increase of water production reaching the 100 barrels of water per day (bbl/day) per well or the water is determined to be fresh (less than 500 mg/L total dissolved solids (TDS)), then the TWG will convene and discuss the data and recommend action items to address potential impacts from withdrawing larger volumes and/or fresh produced water with CBM production; and
- Permeability and drainage patterns will be examined yearly. If permeability is greater than measured in the past or if the drainage pattern varies from past modeling, the TWG will convene to discuss and evaluate the new data.

Other Items Discussed

- Petrox does not plan to drill another CBM production well within the outcrop zone in the near future;
- If another APD is submitted to the BLM for a CBM production well within the outcrop zone, the following steps will occur:
 1. Outcrop Zone Report will be updated;
 2. TWG will convene and discuss Outcrop Zone report, plans for new CBM production well, and schedule;
 3. TWG will prepare recommendations to the BLM;
 4. TWG recommendations would be distributed to NSJB Stakeholders; and
 5. BLM would decide on APD application.
- LTE is preparing a questionnaire for landowners along the Kf outcrop to identify any natural springs on their property. If natural springs are present, LTE would review locations on a case-by-case basis to determine if the natural spring is on or near the Kf outcrop and if sampling the natural spring is necessary.



MEMORANDUM

DATE: December 12, 2014

TO: Technical Working Group (TWG)

FROM: LT Environmental, Inc. (LTE)

SUBJECT: Technical Working Group Meeting #4 Summary

TECHNICAL WORKING GROUP MEETING #3

Attendees

Mike Clark – Petrox Resources, Inc. (Petrox)

Scott Lindsay – Elm Ridge Resources, Inc. (Elm Ridge)

Amy Archuleta – Elm Ridge

Sam Clark – Elm Ridge

Walt Brown – United States Forest Service (USFS)

Karen Spray – Southern Ute Indian Tribe (SUIT)

Jim Hughes – Colorado Oil and Gas Conservation Commission (COGCC)

Mark Weems - COGCC

Daniel Moir – LTE

This meeting represented the fourth meeting of the TWG to discuss, evaluate, and assess Petrox Resources, Inc. (Petrox) and Elm Ridge Resources, Inc. (Elm Ridge) coalbed methane (CBM) development within the Fruitland Formation (Kf) outcrop zone in Archuleta County, Colorado. The mile and a half outcrop zone was developed in the Record of Decision (ROD) for the Northern San Juan Basin (NSJB) Final Environmental Impact Statement (FEIS).

This meeting was convened to discuss Results of the 2014 Outcrop Zone Report and drilling plans of Petrox for 2015. Below is a summary of discussion during the December 12, 2014 meeting.

2014 Outcrop Zone Report

Mr. Moir with LTE summarized the monitoring results from 2014. The drainage transect surveys, regional reconnaissance survey, and abandoned coal mine surveys did not detect the presence of methane seepage or near surface coal fires. Analytical results of water samples from natural springs were similar to those in prior years.

As part of the ROD, LTE will include gas and water production data for the Fosset Gulch Unit into the 2014 Outcrop Zone Report as well as an evaluation of the data. Individual well production graphs will be included for a visual representation of the data. Any other comments from the TWG will be incorporated in the revised final report.

Fosset Gulch Unit Drilling Plans for 2015

- Petrox, at the request of the Bureau of Land Management (BLM), will drill a lateral to the existing 9U#1 and 9U#2 production wells;
- The 9U#1 lateral will produce from the same drainage area as the current vertical well. This well requires a Sundry Notice for the lateral since it will continue to drain from Federal minerals;
- The 9U#2 will produce from a different drainage area than the current vertical well. This well will require a new Application for Permit to Drill (APD) since it will shift from producing from fee minerals to Federal minerals;
- The BLM has designated the participating areas (PAs) for each well as 80 acres around the vertical well plus 80 acres around the terminus of the lateral that will be connected to the vertical area (see attached PAs). According to the PAs for the 9U#1 and 9U#2, drainage will not encounter the Kf outcrop;
- Production data for these two wells will be included in subsequent outcrop zone reports; and
- The 9U#3 lateral direction has been revised, which will not be within the outcrop zone. As such, future data for this well is not necessary to be included into subsequent outcrop zone reports. Petrox will confirm this and report back to the TWG.

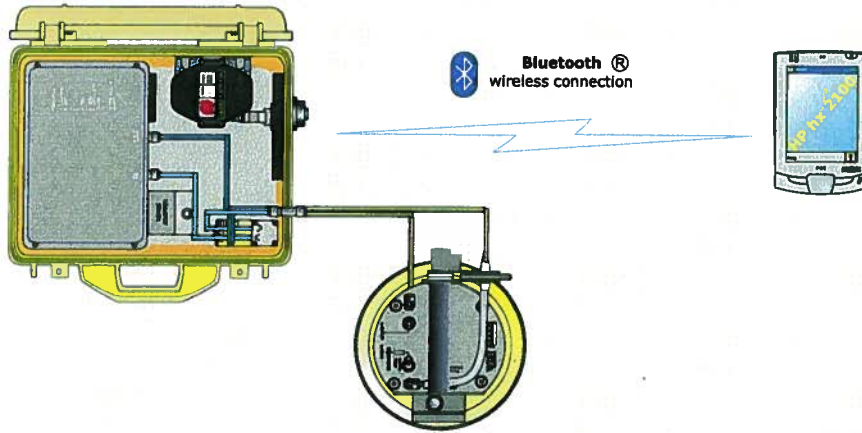


APPENDIX B
EQUIPMENT SPECIFICATIONS



WEST Systems portable soil flux meter for Carbon dioxide, Methane and Hydrogen sulfide fluxes

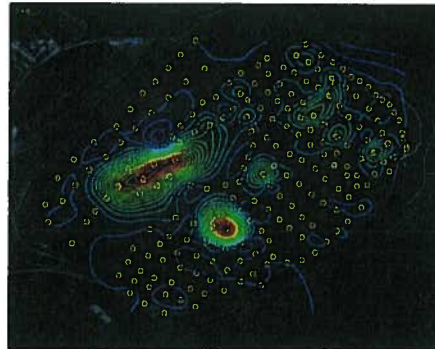
The WEST Systems Fluxmeter is a portable instrument for the measurement of soil gas diffuse degassing phenomena that uses the accumulation chamber method.



This method studied for soil respiration in agronomy (Parkinson) and for soil degassing in volcanic areas (R. Cioni et al.), has been designed by WEST Systems to obtain a portable instrument that allows the performance of measurements with very good accuracy in a short time. The instrument allows a wide range evaluation of the amount of soil gas flux and can be utilized for the evaluation of biogas degassing (landfills), for the survey of non visible degassing phenomena in volcanic and geothermal areas as well as soil respiration rate in agronomy. In the picture below, the results of the degassing survey of a landfill.



Portable fluxmeter



Methane flux contour lines



a group of researchers during a flux mapping fieldwork, using the WS-LI820 flux meter
Courtesy of United States Geological Survey

West Systems Srl
Via Molise 3 - Zona Ind. Gello - 56025 Pontedera (PI) Italy
Phone +39 0587 294216 www.westsystems.com
Fax +39 0587 296068 g.virgili@westsystems.com

WEST
Systems

Portable soil flux meter

Common physical characteristics:

Total Weight = 8.3 Kg/16 lbs. to be carried on the back using the backpack-like support vest. The field operator will also have to carry one of the accumulation chambers and the palmtop:

Warm Up

Only at instrument cold start-up a warm-up time of 20 minutes is required. The typical measurement time ranges from 2 to 4 minutes and the autonomy of the instrument is about 4 hours with a single NiMH 14.4 Volts, 2.6 A/h battery. The instrument comes with two interchangeable batteries.

Accumulation Chamber specifications:

- Accumulation chamber A diameter : 200 mm / Height: 100 mm / weight: 1.5 Kg/3.3 lbs
- Accumulation chamber B diameter : 200 mm / Height: 200mm / weight : 2.2 Kg/4.84 lbs

Palm top computer: PocketPC Color Display based on Windows Mobile operating system.

- PalmTop with cables, 0.3 Kg/0.7 lbs.
- Size 125mm (4.8") x 82mm (3.2") * 25 mm (1").

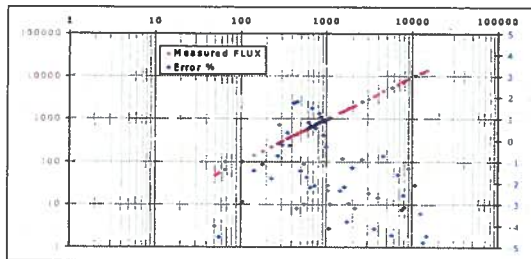
Software The instrument is supplied with a custom software, FluxManager, which allows recording and visualization of the increase in concentration of the target gas in the accumulation chamber, and then the flux calculations. The obtained measurements can be saved on the palmtop computer and then transferred to a desktop PC with a USB connection or using a SD card.

The instrument is supplied complete with:

- backpack-like support vest
- Carrying case for transport and storage
- 2 batteries NiMH 14.4 Volts 2.6 A/h and 1 NiMH battery charger
- Accumulation chamber A and B
- Palmtop Pocket PC
- User Manual, in English
- FLUX Manager Software for Windows Mobile, in English

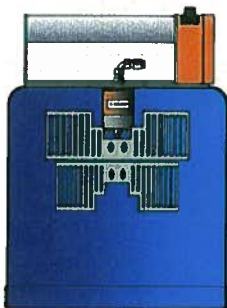
The standard flux meter configuration is supplied with a single gas detector, normally the carbon dioxide detector. The fluxmeter can host two sensors by the way special releases, based on specific customer request, it can be supplied with a maximum of 3 sensors.

Finally we improved the connection between the instrument and the palmtop that now is based on Bluetooth wireless embedded device.



The measured carbon dioxide flux vs imposed flux (grams $m^{-2} day^{-1}$);
The error % vs imposed flux (in blue).

The instrument is extremely versatile and allows measurement of flux in 2/4 minutes. In the picture: Soil bio-gas flux monitoring in a landfill.

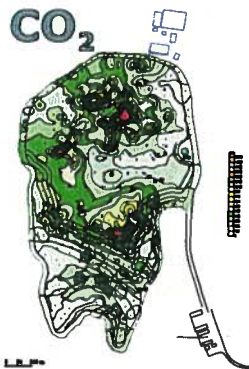


Accumulation Chamber Type B

The accumulation chambers

In the normal use of instrument only the chamber B is used. To extend the instrument sensitivity to very low fluxes the accumulation chamber A is supplied.

	Type A	Type B
net area m^2	0.0314	
net volume m^3	0.003	0.006



CO₂ - LI820

LI820 based Carbon dioxide fluxmeter

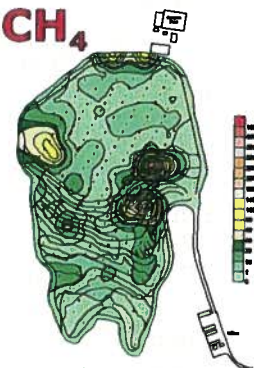
The CO₂ Fluxmeter is equipped with the LICOR LI-820 the most accurate and reliable portable carbon dioxide detector. The LI-820 is a double beam infrared sensor compensated for temperature variation in the range from -10 to 45°C and for atmospheric pressure variation in the range 660-1060 hPa. Accuracy 2% repeatability ±5ppm. The full scale range can be set to 1000, 2000, 5000 or 20000 ppmV of carbon dioxide. The characteristics of precision refer to the sensor set to a full scale range of 20000 ppmV. If a very high sensitivity is required, the detector can be set to 1000 or 2000 ppm full scale value to measure with very high precision fluxes in the range from 0 to 10 moles m⁻² day⁻¹

CO₂ FLUX Measurement range:

from 0 up 600 moles m⁻² day⁻¹

The accuracy depends on the measured flux:

0 to 0.5 moles m ⁻² day ⁻¹	25% (Acc.ch.A)
0.5 to 1 moles m ⁻² day ⁻¹	15% (Acc.ch.A or B)
1 to 150 moles m ⁻² day ⁻¹	10% (Acc.ch.B)
150 to 300 moles m ⁻² day ⁻¹	10% (Acc.ch.B)
300 to 600 moles m ⁻² day ⁻¹	20% (Acc.ch.B)



WS-HC CH₄

WS-DRAGER: CO₂ Flux measurement:

A double beam infrared sensor compensated for temperature variation in the range from -20 to 65°C. Accuracy 3%. The full scale value can be set from 2,000 to 300,000 ppm of carbon dioxide. Carbon Dioxide flux measurement range from 0.5 to 1500 moles/m² per day.

The precision depends on the measured flux:

range: 0.5 - 5 moles/m² per day 25% (Acc. chamber A)

5-350 moles/m²/day 10% (Acc. chamber B)

350-600 moles/m²/day 25% (Acc. chamber B)

600-1500 moles/m²/day 25% (Acc.Ch.B / F.S.=10%)

Methane fluxmeter

The methane sensor is an IR spectrometer. The full-scale range is 5000ppm, accuracy of 5% of reading, and repeatability is 2% of span. Detection limit 60 ppm, resolution 22 ppm. The detector was designed to measure the not controlled emissions of landfill, but it can be used to detect methane emission from coal or wherever the 0.2 moles/m²/day detection limit is acceptable.

Methane Flux measurement range

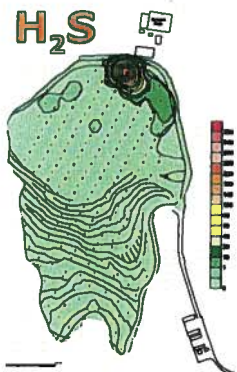
from 0.2 up 300 moles m⁻² day⁻¹

The fluxmeter is provided with 2 accumulation chambers and the accuracy depends on the measured flux:

0.2 to 10 moles m⁻² day⁻¹ 25% (Acc.Ch.A)

10 to 150 moles m⁻² day⁻¹ 15% (Acc.Ch.A)

150 to 300 moles m⁻² day⁻¹ 20% (Acc.Ch.B)



H₂S - WEST

Hydrogen sulfide

The hydrogen sulphide detector is an electrochemical cell with the following specifications:

The full-scale range is 20ppm, with a precision of 3% of reading, and the repeatability is 1.5% of span with a zero offset of 0.3%.

H₂S Flux measurement range: from 0.0025 to 0.5 moles/m² per day.

The precision depends on the measured flux:

0.0025 - 0.05 moles/m² per day ±25% (Acc. Chamber A)

0.05 - 0.5 moles/m² per day ±10% (Acc. Chamber B)

NOTE: The hydrogen sulphide flux evaluation can be affected by the presence of large quantities of water in both liquid and vapour phases.

We thanks to N.Lima et al. for the maps.

West Systems Srl
Via Molise 3 - Zona Ind. Gello - 56025 Pontedera (PI) Italy
Phone +39 0587 294216 www.westsystems.com
Fax +39 0587 296068 g.virgili@westsystems.com

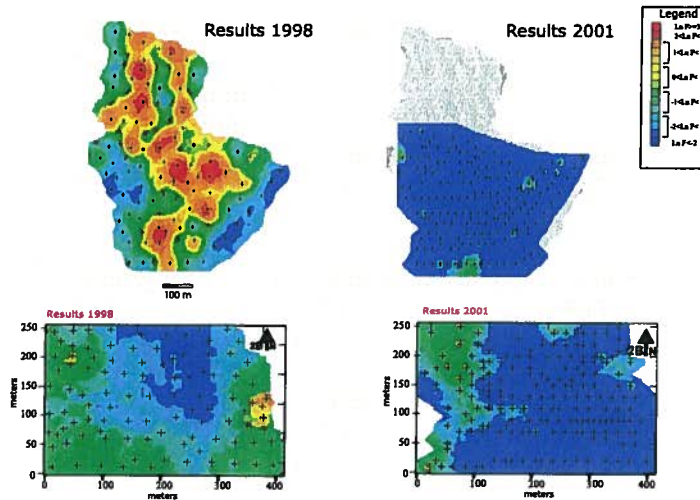
WEST
Systems

Application on a landfill: mapping the biogas non controlled emissions.

The figure shows the compare between the results of the measurement regime of a land/fill undertaken in 1998 and 2001: the mapping performed in 1998 gave clear indications of the areas which required intervention to improve the cover and the capture system.

The interventions were performed only where necessary with a significant economic savings.

The measurement regime of 2001 indicates without any doubt that the interventions were efficient and state-of-the-art.



The obtained results:

- Minor atmospheric emissions;
- Higher quantity and better quality of biogas for cogeneration;
- Optimisation of management costs.

Continuous soil flux monitoring

WEST Systems produces a soil gas station for the continuous monitoring of carbon dioxide and hydrogen sulfide flux, soil temperature, soil water content, soil pressure gradient, soil heat flux and meteorological parameters.

For more information contact your local representative, visit our web site or e-mail to: g.virgili@westsystems.com

Local sales representative

H.Q.

West Systems Srl

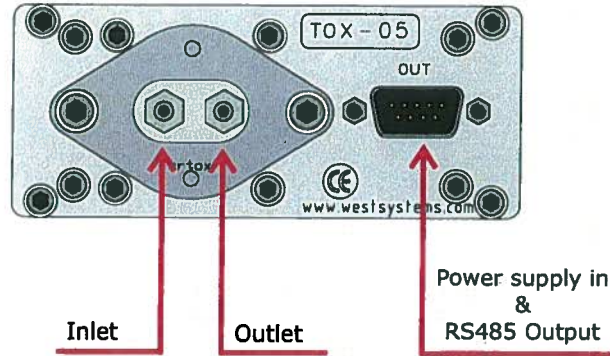
Via Molise 3 - Zona Ind. Gello - 56025 Pontedera (PI) Italy
 Phone +39 0587 294216 www.westsystems.com (or .it)
 Fax +39 0587 296068 g.virgili@westsystems.com (or .it)

Japan

SHOKO CO., LTD.

7-13,1-chome, Shibakoen, Minato-ku Tokyo
 105-8432, Japan
 TEL : 03-3459-5106 FAX : 03-3459-5081
 WEB SITE <http://www.shoko.co.jp>
 e-mail s-isotope@shoko.co.jp

Hydrogen Sulfide Detector



Pin	Signal
1	Gnd
2	+VDC
3	Gnd
4	RS485-B
5	RS485-A
6	Gnd
7	+12V
8	Gnd
9	RS485-B

Legenda

Gnd: Ground reference for power supply and RS485

+VDC: 10-28 Volts Power supply input

RS485-A: Digital signal output A

RS485-B: Digital signal output B

Sensor specifications

Ambient conditions:

Air temperature -40°C to 65 °C

Air pressure 700 hPa to 1300 hPa

Air RH 5% - 95% non condensating.

Expected sensor life > 24 months.

Chemical cell order code: WEST H2S-BH

Detector order code: WEST TOX-05-H2S-BH

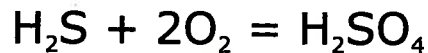
Factory calibration : 20 ppm

RMS Noise <= 0.02 ppm

Zero Offset <= 0.2 ppm

Max Overrange >= 200 ppm

The chemical cell reaction is:



the gas sample specific consumption is very low:

$$2.5 \times 10^{-10} \text{ moles/Sec per ppm}$$

Due to this consumption the H2S flux is methodically underestimated by a -10% with the Accumulation Chamber A and by a -5% when using the accumulation chamber B. Then we advise to use the accumulation chamber B except when the flux is very very low.

Appendix M

WS-HC detector

WS-HC Hydrocarbon Flux measurement:

The HydroCarbon detector is based on a double beam infrared spectrometer able to detect methane, hexane, propane and other molecules with HC linkages. The instrument comes calibrated for the methane. *The instrument requires a frequent **zero base-line** calibration that will be done using atmospheric air. The calibration requires 20 second.*

Detector specifications:

Accuracy 5%

Repeatability 2%

Resolution 22 ppm (Methane equivalent)

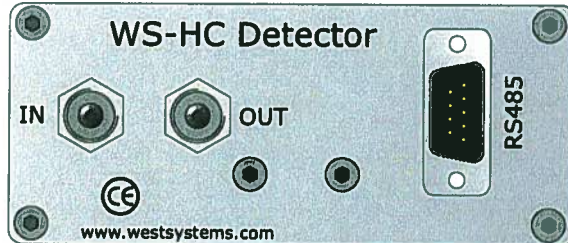
Full scale range is 50000 ppm of methane.

Detection limit 60 ppm.

Methane flux measurement range from 0.1 to 150 moles/m² per day.
The precision depends on the measured flux:

range	0.1	5	moles/ m ² per day	±25%
	5	150	moles/ m ² per day	±10%

The measurement of very low fluxes (< 0.1 moles/m²/day) is possible but the error will increase due to the low detector sensitivity.



RS485 Connector DB9 Male panel

Pin 1	Gnd
Pin 2	+Power supply
Pin 3	Gnd
Pin 4	RS485 B
Pin 5	RS485 A
Pin 6	Gnd
Pin 7	+Power supply
Pin 8	Gnd
Pin 9	RS485 B

The gas fittings can be used with rilsan 6x4 mm tubes or silicon 5x3.2 tubes. Please respect inlet and outlet ports.

LI-820 Specifications

CO₂ Specifications

Measurement Range: 0-1000 ppm, 0-2000 ppm with 14 cm bench; 0-5000 ppm, 0-20000 ppm with 5 cm bench

Accuracy: < 2.5% of reading with 14 cm bench; 4% of reading with 5 cm bench

Calibration Drift

¹**Zero Drift:** < 0.15 ppm / °C

²**Span Drift at 370 ppm:** < 0.03% / °C

³**Total Drift at 370 ppm:** < 0.4 ppm / °C

RMS Noise at 370 ppm with 1 sec Signal Filtering: < 1 ppm

¹ Zero drift is the change with temperature at 0 concentration

² Span drift is the change after re-zeroing following a temperature change

³ Total drift is the change with temperature without re-zeroing or re-spanning

Measurement Principle: Non-Dispersive Infrared

Traceability: Traceable gases to WMO standards from 0-3000 ppm. Traceable gases to EPA protocol gases from 3000 to 20000 ppm

Pressure Compensation Range: 15 kPa-115 kPa

Maximum Gas Flow Rate: 1 liter/minute

Output Signals: Two Analog Voltage (0-2.5 V or 0-5 V) and Two Current (4-20 mA)
Digital: TTL (0-5 V) or Open Collector

DAC Resolution: 14-bits across user-specified range

Source Life: 18000 hours

Power Requirements: Input Voltage 12-30 VDC
1.2A @ 12V (14 W) maximum during warm-up with heaters on
0.3 A @ 12 V (3.6 W) average after warm-up with heaters on

Supply Operating Range: 12-30 VDC

Operating Temperature Range: -20 to 45 °C

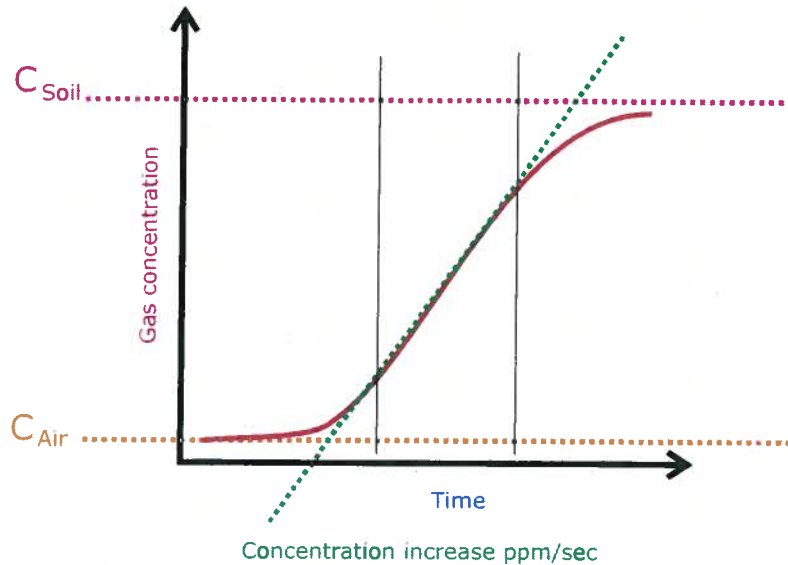
Relative Humidity Range: 0 to 95% RH, Non-Condensing

Dimensions: 8.75" x 6" x 3" (22.23 x 15.25 x 7.62 cm)

Weight: 2.2 lbs (1 kg)

Quantifying the flux

How explained in the chapter 3 the flux is proportional to the concentration increase ratio ppm/sec. The proportionality factor depends on the chamber volume/surface ratio as well as the barometric pressure and the air temperature inside the accumulation chamber.



There are two methods to carry out the field work, in both cases for each measurement you have to record the type of accumulation chamber used, the barometric pressure, and the air temperature.

The variation of few mBar of the pressure and or few degrees of temperature do not affect the evaluation of flux very much, then you can use a mean value for both parameters. Of course that depends on the accuracy you want to reach for the evaluation of flux.

The instrument measures the barometric pressure, using the embedded pressure sensor of the LICOR, with a good accuracy. A platinum Pt100 or a thermo-couple thermometer can be used to measure the air temperature as well as the soil temperature.

Choosing the flux measurement unit

The first measurements made, 10 years ago, with the accumulation chamber was expressed in cm/sec which is a speed, the speed of carbon dioxide flowing out from the soil. During the last ten years several units have been used by volcanologist and by geochemistry researchers. The most common unit is grams/squaremeter per day, but using the same instrument for two gas species to express the flux using this unit means to have two different conversion factors. Actually we use the unit **moles/squaremeter per day** that has two advantages: A single conversion factor for every gas specie and an easy conversion of the flux in grams/sm per day simply multiplying the result expressed in moles/sm per day for the molecular weight of the target gas.

From the [tools][settings] menu you can set the accumulation chamber factor in the "A.c.K." field.

If this factor is set to 1 the instrument will give you results expressed in ppm/sec, that's simply the slope of the curve in the selected interval.

If you set the A.c.K to a value different from 1 the instrument will give you the results expressed in moles per square meter per day.

Please see next page.

Quantifying the flux

Method 1: Measuring the slope

Set the Accumulation Chamber factor to 1 in order to have the flux measurement expressed in the slope unit "ppm/sec" and translate it in the desired unit with a post processing.

Using this method you can focus only on the accumulation chamber interfacing with the soil, the flux curve shape and the other aspects of the measurement, putting off choosing the correct accumulation chamber factor.

Method 2: Measuring the flux directly in moles/sm/day.

To get the results directly in moles/sm/day you have to set the Accumulation Chamber factor to the correct value, taking it from the tables.

For each measurement, if there are variations in the air temperature, or of the barometric pressure, or if you changed the accumulation chamber you have to select the [tools][settings] menu and put the correct accumulation chamber factor in the "A.c.K." field. This operation can be "critical". In any case on the saved files you'll find the results of flux evaluation expressed in both units, the raw ppm/sec and the moles/sm/day computed with the A.c.K. you set.

The accumulation chamber factors

Here following the formula used to compute the A.c.K.:

$$K = \frac{86400 \cdot P}{10^6 \cdot R \cdot T_k} \cdot \frac{V}{A}$$

Where

- **P** is the barometric pressure expressed in mBar (hPa)
- **R** is the gas constant 0.08314510 bar L K⁻¹ mol⁻¹
- **T_k** is the air temperature expressed in Kelvin degree
- **V** is the chamber net volume in cubic meters
- **A** is the chamber inlet net area in square meters.

The dimensions of the A.c.K. are

$$K = \frac{\text{moles} \cdot \text{meter}^{-2} \cdot \text{day}^{-1}}{\text{ppm} \cdot \text{sec}^{-1}}$$

In the table the conversion factors vs temperature and barometric pressure for the Accumulation Chamber Type A and B are reported.

An example:

You're using the accumulation chamber B, the slope of the flux curve is 2.5 ppm/sec, the barometric pressure is 1008 mBar (hPa) and the air temperature is 22 °C.

From the table B get the value that correspond to the barometric pressure and temperature. In this case I get the value computed for 25°C and 1013 mBar : 0.696.

Then the flux is: 2.5 x 0.696 = 1.74 moles per square meter per day.

The Gasport Gas Tester is designed for gas utility workers to detect methane and certain toxic gases. It is a reliable, simple, versatile tool to help your service technicians get the job done quickly! With multiple ranges and sensing capabilities built into one rugged housing, the Gasport Tester simplifies your work by reducing the number of meters you have to carry on the job.



Applications

The Gasport Tester's poison-tolerant methane sensor provides three measurement ranges for your daily service needs:

- Open air, safety sampling
- Small, in-home leak detection
- Street/outdoor service line leak detection

Features and Benefits

- **Proven in field use—rugged and reliable**
Less costly to maintain, less time in repair
- **Multiple functions in one instrument**
No need to buy, carry & maintain multiple instruments
- **New, poison-tolerant combustible gas sensor**
Reduces meter ownership costs
- **User-selectable, “silent” operation mode**
Reduces customer disturbances and worries
- **Fast warm up time**
Fastest warm up time in industry saves time
- **Can monitor up to four gases at a time**
Fewer instruments to carry
- **Show all gas concentrations simultaneously**
Eliminates guesswork on what reading is displayed
- **Autoranging methane sensor**
Automatically switches between 0-5% and 5-100% methane ranges
- **Gas readings recorded for later retrieval**
Can double check readings after job is done
- **Simple manual or automated calibration options**
Reduces training time and helps ensure accuracy
- **Intrinsically safe**
Meets safety standards for work in hazardous areas
- **Lifetime warranty on case and electronics**
Reduced maintenance and lifetime costs



Specifications

Gas	Range	Resolution
Methane	0-5000 ppm	50 ppm
Methane	0-100% LEL or 0-5% CH ₄	1 % LEL or 0.1% CH ₄
Methane	5-100% CH ₄	1% CH ₄
Oxygen	0-25%	0.1%
Carbon Monoxide	0-1000 ppm	1 ppm
Hydrogen Sulfide	0-100 ppm	1 ppm

Battery types:	NiCd and Alkaline
Case material:	Impact resistant, stainless-steel-fiber-filled polycarbonate
Operating temperature:	normal -10 to 40°C; extended -20 to 50°C
Operating humidity:	Continuous: 15-95% RH, non-condensing Intermittent duty: 5-95% RH, non condensing
Warm up time:	Less than 20 seconds to initial readings
Datalog capacity:	12 hours
Input:	3 clearly marked, metal domed keys
Warranty:	Case and Electronics: Lifetime Sensors and consumable parts: 1 year

The answer for gas utilities' gas detection needs

Ordering Information

Battery Chargers

Part No.	Description
494716	Omega 120 VAC 50/60Hz
495965	Omega 220 VAC 50/60Hz
801759	Omega 110/220 VAC, Five Unit, 50/60Hz
800525	Omega 8 - 24VDC for vehicle use

Battery Packs

Part No.	Description
496990	Standard NiCd Rechargeable
800526	Alkaline, Type C
711041	Alkaline, with Thumbscrews
800527	Heavy Duty NiCd Rechargeable

Sensors

Part No.	Description
813693	Combustible Gas
480566	O ₂
812389	CO
812390	H ₂ S

Protective Boots

Part No.	Description
804955	Black, for NiCd Battery Packs
802806	Orange, for NiCd Battery Packs
806751	Black, for Alkaline Battery Packs
806750	Orange, for Alkaline Battery Packs
806749	Black, for HD NiCd Battery Packs
806748	Orange, for HD NiCd Battery Packs
812833	Yellow Soft Carrying Case with Harness
711022	Black padded Vinyl Carrying Case with Harness

Sampling Equipment

Part No.	Description
800332	Probe - 1 ft., plastic
800333	Probe - 3 ft., plastic
803561	Probe - 3 ft., plastic (holes 2" from end) (bar hole probe)
803962	Probe - 3 ft., plastic (holes 2" from handle) (solid probe)
803848	Probe - Hot Gas Sampler
710465	Sampling Line - 5 ft., coiled
497333	Sampling Line - 10 ft.
497334	Sampling Line - 15 ft.
497335	Sampling Line - 25 ft.

Sampling Accessories

Part No.	Description
801582	Replacement Filter, Probe, pkg. of 10
801291	External Filter Holder
014318	Charcoal Filter
711039	Line Scrubber Filter Holder
711059	Line Scrubber Replacement Cartridges, Box of 12
808935	Dust Filter, Pump Module
802897	Water Trap (Teflon) Filter, Pump Module

Calibration Check Equipment

Part No.	Description
477149	Calibration Kit Model RP with 0.25 lpm Regulator
491041	Calibration Gas - methane, 2.5%
473180	Calibration Gas - 300 ppm CO
813718	Calibration Gas - methane, 2.5% oxygen, 15% 60 ppm CO
813720	Calibration Gas - methane, 2.5% oxygen, 15% 300 ppm CO 10 ppm H ₂ S
710288	Gasmiser™ Demand Regulator 0 - 3.0 lpm

Accessories

Part No.	Description
804679	Data Docking Module Kit. Includes the Data Docking Module, MSA Link Software and Instruction Manual

Approvals

The Gasport Gas Tester has been designed to meet intrinsic safety testing requirements in certain hazardous atmospheres.

The Gasport Gas Tester is approved by MET (an OSHA Nationally Recognized Testing Laboratory [NRTL]) for use in Class I, Division I, Groups A, B, C, D; Class II, Division I, Groups E, F, G; and Class III Hazardous locations. Gasport Gas Testers sold in Canada are approved by CSA for use in Class I, Division I, Groups A, B, C, and D locations.

Contact MSA at 1-800-MSA-2222 for more information or with questions regarding the status of approvals.

Gasport Gas Tester Kits

	LEL Display	O ₂	CO	H ₂ S	Alarms Always	Alarms Optional	Leak Detect Page Peak	Alkaline Battery	NiCd Battery	5ft Coiled Line	1ft Probe	Part No.
4-Gas, Selectable, NiCd	•	•	•	•	•	•	•	•	•	•	•	711489
4-Gas, Selectable, Alkaline	•	•	•	•	•	•	•	•	•	•	•	711490
3-Gas, Selectable, NiCd	•	•	•	•	•	•	•	•	•	•	•	711493
3-Gas, Selectable, Alkaline	•	•	•	•	•	•	•	•	•	•	•	711494
2-Gas, Selectable, NiCd	•	•	•	•	•	•	•	•	•	•	•	711495
2-Gas, Selectable, Alkaline	•	•	•	•	•	•	•	•	•	•	•	711496
4-Gas, Alarms On, NiCd	•	•	•	•	•	•	•	•	•	•	•	711491
4-Gas, Alarms On, Alkaline	•	•	•	•	•	•	•	•	•	•	•	711492

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Gasport Gas Tester, configured exactly the way you want it. You can choose from an extensive line of base instrument components and accessories. To obtain a copy of the "ATO System and Price Information for the Gasport Gas Tester," call toll-free 1-800-MSA-2222, and request Bulletin 0804-28. To obtain a copy of the ATO via FAX, call MSA QuickLit Information Service at 1-800-672-9010. At the prompt, request QuickLit Document #2345 (ATO for Gasport Gas Tester).

Note: This Data Sheet contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.

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Corporate Headquarters
P.O. Box 426
Pittsburgh, PA 15230 USA
Phone (412) 967-3000
www.MSAnet.com

U.S. Customer Service Center
1-800-MSA-2222

MSA International
Phone (412) 967-3354
FAX (412) 967-3451

Offices and representatives worldwide
For further information:



QRAE II User's Guide



**Covers QRAE II Diffusion & Pump Models
with Firmware Version 3.60 or higher**



P/N 020-4100-000 Rev. F
May 2013

QRAE II User Guide

1.2 Specifications

QRAE II Specifications

Configuration	Pumped or diffusion 4-gas with datalogging		
Dimensions:	Diffusion: 5" L x 2.8" W x 1.5" H (125mm x 72mm x 38mm) Pump: 5" L x 2.8" W x 1.5" H (125mm x 72mm x 38mm)		
Weight:	Diffusion: 9 oz (250g) Pump: 12 oz (350 g) with battery		
Detectors:	2 Electrochemical toxic gases sensors 1 Solid Polymer Electrolyte oxygen sensor 1 Catalytic sensor for combustible level organics		
Battery:	Rechargeable 3.7V Li-ion battery pack (6-hour charge time) or a 3 AA alkaline battery adapter.		
Operating Time:	Up to 10 hours continuous w/ Li-ion battery pack		
Display:	4-line graphical LCD with automatic LED backlight for dim lighting conditions		
Keypad:	2 programming/operation keys		
Direct Readout:	Up to 4 simultaneous values with sensor name, battery charge, high and low values for all sensors, elapsed time, and datalogging on/off state		
Sampling Method:	Diffusion or pumped (depending on model)		
Range, Resolution & Response Time:	LEL	0-100%	1 % 15 sec
	O ₂	0-30%	0.1 % 20 sec
	CO	0-1000 ppm	1 ppm 25 sec
	H ₂ S	0-100 ppm	0.1 ppm 30 sec
Alarm Settings:	Separate limits for TWA, STEL, High, Low		
Alarms:	≥95 dB @ 30 cm buzzer, flashing red LEDs, vibration alarm, LCD to indicate exceeded preset limits, low battery, or sensor failure		
Calibration:	Two-point field calibration for fresh air and standard reference gas		
Protection:	Password protected calibration settings, alarm limits, and data		
Intrinsic Safety:	CSA Class I, Division 1, Group A, B, C, D, T4 (US & Canada), SIRA ATEX II 2G Ex ia d II C T4 Gb (Europe), IECEx Ex d ia II C T4 Gb		
EM Immunity:	No effect when exposed to 0.43mW/cm ² RF interference (5-watt transmitter at 12"/10cm).		
Data Storage:	64,000 readings (64 hours, 4 channels at 1 minute interval) in non-volatile memory.		
Datalog Interval:	Programmable 1- to 3,600-second intervals		
Alarm Settings:	Separate alarm limit settings for TWA, STEL, Low and High alarm.		
Communication:	Download data to PC and upload monitor setup from PC through an RS-232 link to PC serial port		
Temperature:	-20° C to 50° C (-4° F to 122° F)		
Humidity:	0% to 95% relative humidity (non-condensing)		

Caution:

Refer to RAE Systems Technical Note TN-114 for sensor cross-sensitivities.
Refer to RAE Systems Technical Note TN-144 for LEL sensor poisoning.

KEY FEATURES

Trimble Floodlight satellite shadow reduction technology

More positions and increased accuracy in tough environments

Sunlight readable display

For unmatched clarity in bright sunlight

3.5G cellular capability

High-speed Internet connectivity in the field

5 megapixel autofocus camera

Capture high quality photographs and link directly to features

Field-swappable battery

All day operation and the convenience of swap-and-go battery replacement



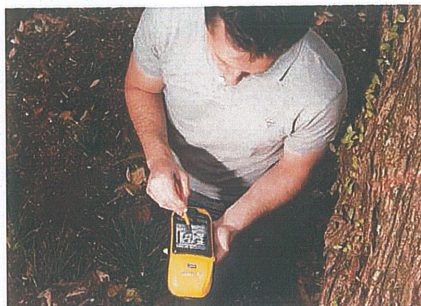
THE ACCURACY YOU NEED ANYWHERE YOU NEED IT

Bringing together the essential functionality for productive GIS data collection in one device, the Trimble® GeoExplorer® 6000 series also delivers positioning accuracy in challenging GNSS situations such as under trees and near buildings with Trimble Floodlight™ technology. Wherever you work, it just works.

Accurate, productive, reliable data collection

Integrating both a GPS/GLONASS receiver and a dual frequency GNSS antenna, the Trimble GeoExplorer 6000 series delivers accuracy you can depend on to record new assets, or reliably navigate back to previously recorded locations.

Used with Trimble's range of powerful field and office software, GeoExplorer 6000 series handhelds allow you to work faster and in more places than ever before. The Trimble GeoExplorer series can deliver down to centimeter accuracy—either postprocessed or in real time for the confidence the job is done right while still on site.



Trees and buildings create "satellite shadows", limiting the areas where you can reliably collect high-accuracy GNSS data. Using Trimble Floodlight technology, the GeoExplorer 6000 series continues to deliver productive, usable data under tree canopy or in urban canyons. You can work with fewer disruptions, meaning better data, faster, at less cost.

Designed for work, wherever you work

The Trimble GeoExplorer series works for the way you work. The built-in 5 megapixel autofocus camera, with geotagging capability, gives you one of the best ways to capture information about an asset, event, or site. A sunlight-optimized display maintains exceptional clarity in all outdoor conditions for crisp on screen text and images. And you can stay connected with an optional integrated 3.5G cellular modem for continuous network and Internet access to real-time map data, web-based services, Trimble VRS™ corrections, and live update of field information.



With the Trimble GeoExplorer 6000 series you get it all.

TRIMBLE GEOEXPLORER 6000 SERIES

PRODUCT MODELS

	GeoXH	GeoXT
Accuracy	Decimeter/Centimeter	Submeter
Floodlight	Yes	Optional
Cellular modem	Optional	Optional
Camera	5 MP	5 MP

GNSS

Receiver Trimble Maxwell™ 6 GNSS chipset
 Channels 220 channels
 Systems GPS, GLONASS¹
 WAAS/EGNOS/MSAS/GAGAN
 Update rate 1 Hz
 Time to first fix 45 s (typical)
 NMEA-0183 support Optional
 Trimble Floodlight technology Optional
 RTCM support RTCM2.x/RTCM3.x
 CMR support CMR/CMR+/CMRx

GeoXT handhelds

GPS L1C/A
 GLONASS L1C/A, L1P

GeoXH handhelds

GPS L1C/A, L2C, L2E
 GLONASS L1C/A, L1P, L2C/A, L2P

GNSS ACCURACY²

GeoXH Centimeter Edition

Real-time Centimeter output

Horizontal (external antenna)³ 1 cm + 1 ppm
 Vertical (external antenna) 1.5 cm + 2 ppm
 Horizontal (internal antenna) 2.5 cm + 1.2 ppm
 Vertical (internal antenna) 4 cm + 2 ppm

Postprocessed Centimeter output

Horizontal (external antenna)³ 1 cm + 1 ppm
 Vertical (external antenna) 1.5 cm + 1 ppm
 Horizontal (internal antenna) 2.5 cm + 1.2 ppm
 Vertical (internal antenna) 4 cm + 1.5 ppm

All GeoXH configurations

Real-time and postprocessed H-Star (Horizontal RMS)

H-Star 10 cm + 1 ppm

All GeoXH and GeoXT configurations

Real-time DGNSS (Horizontal RMS)

Code 75 cm + 1 ppm
 SBAS⁴ (WAAS/EGNOS/MSAS) typically < 1 m

Postprocessed DGNSS (Horizontal RMS)

Code 50 cm + 1 ppm
 Carrier (after 45 minutes) 1 cm + 2 ppm

ENVIRONMENTAL (MIL-STD-810G)

Drop shock 1.2 m (4 ft) to plywood over concrete
 Functional shock Method 516.6 Procedure I
 Vibration Method 514.6 Procedure I
 Relative humidity 95% non-condensing
 Maximum operating altitude 9,000 m (29,000 ft)
 Maximum storage altitude 12,000 m (40,000 ft)

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TEMPERATURE

Operation -20 °C to +60 °C (-4 °F to +140 °F)
 Storage -30 °C to +70 °C (-22 °F to +158 °F)

INGRESS PROTECTION

Water/Dust IP65

SIZE AND WEIGHT

Height 234 mm (9.2 in)
 Width 99 mm (3.9 in)
 Depth 56 mm (2.2 in)
 Weight (inc. battery) 925 g (2.0 lb)

BATTERY

Type Rechargeable, removable Li-Ion
 Capacity 11.1 V 2.5 AH
 Charge time 4 hours (typical)

BATTERY RUN TIME⁵

	GeoXH	GeoXT
GNSS	9 hours	11 hours
GNSS & Wi-Fi	8 hours	9.5 hours
GNSS & cellular	6.5 hours	7 hours
Standby time (typical)	50 days	50 days

CONNECTORS & INPUTS

- Internal microphone and speaker
- Mini USB connector
- DE-9 serial via optional USB to serial converter
- External power connector
- SIM socket
- SDHC card socket

CAMERA

Still mode Autofocus 5 MP
 Still image format JPG
 Video mode Up to VGA resolution
 Video file format WMV with audio

CELLULAR⁶ & WIRELESS⁷

UMTS/HSDPA 850/900/2100 MHz
 GPRS/EDGE 850/900/1800/1900 MHz
 Wi-Fi 802.11 b/g
 Bluetooth Version 2.1 + EDR

DISPLAY

Type Transflective LED-backlit LCD
 Size 4.2" (diagonal)
 Resolution 480x640
 Luminance 280 cd/m2

HARDWARE

Processor TI OMAP 3503
 RAM 256 MB
 Flash 2 GB
 External storage SD/SDHC up to 32 GB

LANGUAGES

- English, Spanish, French, German, Italian, Portuguese (Brazilian), Chinese (Simplified), Korean, Japanese, Russian

IN THE BOX

GeoExplorer 6000 series handheld, rechargeable battery pack, pouch and strap, USB data cable, AC power adaptor, screen protector kit, spare stylus & tether, documentation

OPTIONAL ACCESSORIES

- Trimble Zephyr™ Model 2 external GNSS antenna
- Trimble Tornado™ external GNSS antenna
- Trimble Tempest™ external GNSS antenna
- Vehicle power supply
- 1.5 m & 5 m external antenna cable
- Range pole kit for external antenna
- Carbon fiber monopole kit
- Backpack kit for external antenna
- Vehicle mount
- Hard carry case
- Null modem cable
- USB to serial converter cable

SOFTWARE COMPATIBILITY

- Trimble TerraSync software
- Trimble GPS Pathfinder® Office software
- Trimble Positions™ software suite
- Trimble GPSCorrect™ extension for Esri ArcPad software
- Trimble GPS Analyst™ extension for Esri ArcGIS for Desktop software
- Trimble GPS Controller software
- Trimble GNSS Connector software
- Trimble TrimPix™ Pro system
- Custom applications built with a Mobile GIS Developer Community software development kit (SDK)
- Third party NMEA-based applications

¹ GLONASS is enabled on GeoXT and GeoXH handhelds with Floodlight technology enabled.

² Accuracy and reliability may be subject to anomalies due to multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended GNSS data collection practices. Specified Centimeter accuracy can normally be achieved for baselines of 30 km or less. Specified H-Star accuracy can normally be achieved for baseline lengths of 100 km or less. Centimeter and H-Star accuracy is typically achieved within 2 minutes. Carrier postprocessed accuracy is limited to data collected within 10 km of the base station used for corrections.

³ Stated accuracy is for the Zephyr Model 2 antenna.

⁴ SBAS (Satellite Based Augmentation System). Includes WAAS; available in North America only; EGNOS; available in Europe only and MSAS; available in Japan only.

⁵ Actual run time will vary with conditions and environment of use.

⁶ Not available on all configurations. The GeoXH and GeoXT 3.5G edition handhelds are PTCRB certified and can operate on supported networks that do not require carrier certification. Consult with your local reseller for more information.

⁷ Bluetooth and Wi-Fi type approvals are country specific. GeoExplorer 6000 series handhelds have Bluetooth and Wi-Fi approval in the U.S. and in most European countries. For further information please consult your local reseller.

Specifications subject to change without notice.



NORTH & SOUTH AMERICA

Trimble Navigation Limited
 10355 Westmoor Drive
 Suite #100
 Westminster, CO 80021
 USA
 +1-800-538-7800 Option 2 or
 +1-720-279-7994 Phone
 +1-720-587-4878 Fax

EUROPE & AFRICA

Trimble Germany GmbH
 Am Prime Parc 11
 65479 Raunheim
 GERMANY
 +49-6142-2100-0 Phone
 +49-6142-2100-550 Fax

ASIA-PACIFIC & MIDDLE EAST

Trimble Navigation
 Singapore PTE Limited
 80 Marine Parade Road
 #22-06 Parkway Parade
 Singapore, 449269
 SINGAPORE
 +65-6348-2212 Phone
 +65-6348-2232 Fax

YOUR LOCAL TRIMBLE OFFICE OR REPRESENTATIVE



www.trimble.com
 store.trimble.com

Operator's Manual

SMARTROLL™ MP Handheld Instrument



General Specifications

Operating temperature	-5 to 50° C (23 to 122° F)
Storage temperature	-40 to 65° C (-40 to 149° F)
Dimensions	4.7 cm (1.85 in.) OD x 26.9 cm (10.6 in.) with restrictor installed (does not include connector)
Weight	694 g (1.53 lbs)
Wetted materials	PVC, 316 stainless steel, titanium, Acetal, Viton®, PC/PMMA
Environmental rating	IP68 with all sensors and cable attached. IP67 with sensors removed and cable detached.
Reading rate	1 reading every 10 seconds; data logged to smartphone.
Power	6 VDC from battery pack
Interface	iPhone® 4S, iPod touch® 5, or iPad® 3, 4, mini or later; iOS 6.0 or later. Bluetooth® Low Energy (BLE) radio. Purchase the iSitu™ App at the Apple® App Store.
Cable	Black polyurethane. Standard lengths available: 1.5 m, 4.6 m, 9.1 m, 30.5 m (5 ft, 15 ft, 30 ft, 100 ft)
Warranty	2-years
Notes	Specifications are subject to change without notice. Apple, iPhone, iPod touch, and iPad are trademarks of Apple Inc. registered in U.S. and other countries. Bluetooth is a registered trademark of Bluetooth SIG, Inc. Viton is a registered trademark of DuPont Performance Elastomers L.L.C.

Sensor Specifications

Level, Depth, Pressure Sensor Specifications

Accuracy	Typical $\pm 0.1\%$ FS @ 15° C; $\pm 0.3\%$ FS max. from 0 to 50° C
Range	76 m (250 ft); absolute (non-vented)
Resolution	$\pm 0.01\%$ FS or better
Sensor Type	Fixed
Response Time	Instantaneous in thermal equilibrium
Units of Measure	Pressure: psi, kPa, bar, mbar, mmHg, inHg Level: mm, cm, m, in, ft
Methodology	Piezoresistive; ceramic

Barometric Pressure Sensor Specifications (Battery Pack)

Accuracy	± 3 mbar max.
Range	300 to 1100 mbar
Resolution	0.01 mbar
Sensor Type	Fixed
Response Time	Instantaneous in thermal equilibrium
Units of Measure	psi, kPa, bar, mbar, mmHg, inHg, Torr, atm
Methodology	Piezoresistive pressure sensor

Conductivity Sensor Specifications

Accuracy	Typical $\pm 0.5\%$ + 1 $\mu\text{S}/\text{cm}$; $\pm 1\%$ max.
Range	5 to 100,000 $\mu\text{S}/\text{cm}$
Resolution	0.1 $\mu\text{S}/\text{cm}$
Sensor Type	Fixed
Response Time	Instantaneous in thermal equilibrium
Units of Measure	Actual conductivity ($\mu\text{S}/\text{cm}$, mS/cm) Specific conductivity ($\mu\text{S}/\text{cm}$, mS/cm) Salinity (PSU) Total dissolved solids (ppt, ppm) Resistivity (Ohms-cm) Density (g/cm^3)
Methodology	Std. Methods 2510 EPA 120.1

Dissolved Oxygen RDO Fast Cap (Optical Sensor) Specifications

Accuracy	± 0.1 mg/L; ± 0.2 mg/L; $\pm 10\%$ of reading
Range	0 to 8 mg/L; 8 to 20 mg/L; 20 to 50 mg/L; Full operating range: 0 to 50 mg/L
Resolution	0.01 mg/L
Sensor Type	Fixed with replaceable RDO Fast Cap (life: 1 year typical)
Response Time	T90: <30 sec. T95: <45 sec.
Units of Measure	mg/L, % saturation, ppm
Methodology	EPA-approved In-Situ Methods 1002-8-2009 1003-8-2009 1004-8-2009

ORP Sensor Specifications

Accuracy	±5.0 mV
Range	±1400 mV
Resolution	0.1 mV
Sensor Type	Replaceable pH/ORP combo sensor
Response Time	<15 sec.
Units of Measure	mV
Methodology	Std. Methods 2580

pH Sensor Specifications

Accuracy	±0.1 pH unit from 0 to 12 pH units
Range	0 to 14 pH units
Resolution	0.01 pH unit
Sensor Type	Replaceable pH/ORP combo sensor
Response Time	<15 sec., pH 7 to pH 4
Units of Measure	pH units
Methodology	Std. Methods 4500-H+ EPA 150.2

Air Temperature Sensor Specifications (Battery Pack)

Accuracy	±2° C
Range	-20 to 70° C (-4 to 158° F)
Resolution	0.1° C
Sensor Type	Fixed
Response Time	<30 sec.
Units of Measure	Celsius, Fahrenheit
Methodology	EPA 170.1

Sample Temperature Sensor Specifications (Probe)

Accuracy	±0.1° C
Range	-5 to 50° C (23 to 122° F)
Resolution	0.01° C or better
Sensor Type	Fixed
Response Time	<30 sec.
Units of Measure	Celsius, Fahrenheit
Methodology	EPA 170.1

Battery Pack Specifications

Battery Type	Four 1.5V AA lithium or alkaline batteries
Operating temperature	-5 to 50° C (23 to 122° F); 95% relative humidity, non-condensing
Storage temperature	-40 to 65° C (-40 to 149° F); 95% relative humidity, non-condensing
Dimensions & weight	9.5 x 7.6 x 5.7 cm (3.75 x 3 x 2.25 in.) (H x D x W). Weight: 165 g (5.8 oz)
Materials	PC/ABS
Environmental rating	IP67 with battery cover closed
Output options	BLE radio
Battery type	4 AA Lithium or Alkaline
Warranty on battery pack	1-year
Warranty on cable	1-year



GEM™2000

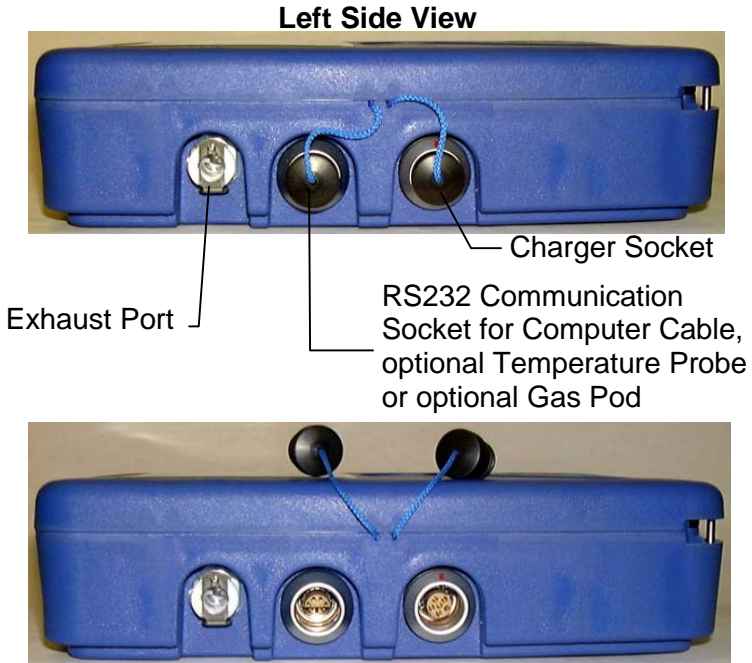
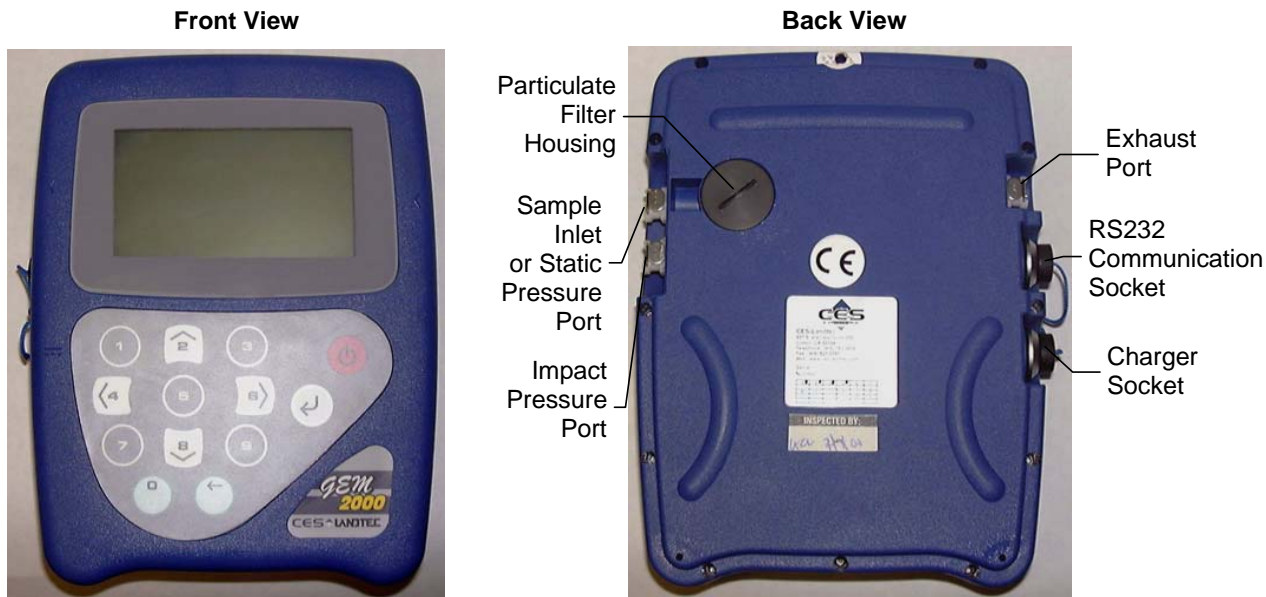
GEM™2000 Plus

GAS ANALYZER & EXTRACTION MONITOR

OPERATION MANUAL

2 General Operational Features

2.1 Physical Characteristics of the GEM™2000 / GEM™2000 Plus



Right Side View



Impact Pressure Port

Sample Inlet or
Static Pressure Port

Keypad



Number entry,
Navigation
and Cursor
Keys

Number entry
Keys

Backlight operation and
'0' (zero) Key

Pump operation and
Back Space Key

On/Off Key

Enter/Store
Key

Whenever a key is pressed the unit will emit a short 'beep' as an acknowledgement. This function cannot be turned off.

2.2 Turning the Instrument On/Off

When switching the instrument on, a long beep will sound, followed by the LANDTEC logo being displayed and the self-test will commence.

When switching the instrument off, the On/Off button must be held down for approximately 15 seconds, at which point a clean air purge will be carried out. If for any reason the instrument 'locks-up' and will not switch off, press and hold the On/Off button for 15 seconds. This will force the instrument to switch off.

2.3 Warm-up Self Test

When switched on, the instrument will perform a predetermined self-test sequence taking approximately 20 seconds, during this time many of the instrument's functions are tested, including:

- General operation
- Pump function
- Gas flow measurement
- Calibration
- Backlight function
- Solenoid function

9 Technical Specifications

9.1 Physical

Weight	4.4 lbs.
Size	L 2.48" x W 7.48" x D 9.92".
Case material	Anti-static ABS.
Keys	Membrane panel.
Display	Liquid Crystal Display 40 x 16 characters. Fiber optic woven backlight for low light conditions.
Filters	User replaceable integral fiber filter at inlet port and external PTFE water trap filter.

9.2 General

Certifications	UL Certified to Class 1, Zone 1, AEx Ib d IIa T4
Temperature measurement	With optional probe 14°F to 167°F.
Temperature accuracy	±0.4°F (± probe accuracy).
Visual and audible alarm	User selectable CO ₂ , CH ₄ and O ₂ Min/Max levels via DataField CS software.
Communications	RS232 protocol via download lead with variable baud rate.
Relative pressure	±250 mbar from calibration pressure

9.3 Power supply

Battery type	Rechargeable Nickel Metal Hydride battery pack containing six 4AH cells. Not user replaceable. Lithium Manganese battery for data retention.
Battery life	Typical use 10 hours from fully charged condition.
Battery charger	Separate intelligent 2A battery charger powered from AC voltage supply (110-230V).
Charge time	Approximately 2 hours from complete discharge.
Alternative power	Can be powered externally for fixed-in-place applications only. Contact LANDTEC for further information.
Battery lifetime	Up to 1,000 charge/discharge cycles.

9.4 Gas Ranges

Detection principle	CO ₂ and CH ₄ by dual wavelength infrared cell with reference channel. O ₂ by internal electrochemical cell.			
Oxygen cell lifetime	Approximately 18 months in air.			
Typical Accuracy 0 - Full Scale	Gas	0-5% volume	5-15% volume	15%-FS
	CH ₄	±0.3%	±1%	±3% (100%)
	CO ₂	±0.3%	±1%	±3% (60%)
	O ₂	±1%	±1%	±1% (21%)
Response time, T90	CH ₄	≤20 seconds		
	CO ₂	≤20 seconds		
	O ₂	≤20 seconds		
Range	CH ₄	0-70% to specification, 0-100% reading.		
	CO ₂	0-40% to specification, 0-100% reading.		
	O ₂	0-25%		

9.5 Pump

Typical flow	300 cc/min.
Flow fail point	50 cc/min approximately.
Flow with 200 mbar vacuum	250 cc/min approximately.
Vacuum	70 inches H ₂ O.

9.6 Operating Conditions

Operating temp range	32°F to 104°F.
Relative humidity	0-95% non-condensing.
Atmospheric pressure range	700-1200 mbar. Displayed in Inches of Mercury (5.9 – 35.4"Hg). Not corrected for sea level.
Atmospheric pressure accuracy	±5 mbar approximately.
Case seal	IP65.

9.7 Optional Gas Pods

Typical Accuracy (Subject to User calibration).	Gas	0-Full Scale
	CO	±10% FS
	H ₂ S	±10% FS
	SO ₂	±10% FS
	NO ₂	±10% FS
	CL ₂	±10% FS
	H ₂	±10% FS
	HCN	±10% FS
Response time, T90	CO	≤60 seconds
	H ₂ S	≤60 seconds
	SO ₂	≤60 seconds
	NO ₂	≤60 seconds
	CL ₂	≤60 seconds
	H ₂	≤60 seconds
	HCN	≤60 seconds
	Range	CO
H ₂ S		0-50 or 0-200ppm
SO ₂		0-20 or 0-100ppm
NO ₂		0-20ppm
CL ₂		0-20ppm
H ₂		0-1000ppm
HCN		0-100ppm

APPENDIX C
FLUX METER DATA



Filename	Site	Northing	Easting	Date	CH4 Flux	H2S Flux	CO2 Flux	ACCUMULATION CHAMBER	PRESSURE (Hpa)	TEMP (°C)	TIME	CH4 Slope	H2S Slope	CO2 Slope	AcK
BigHornSchomburg1_01_13072015_101123.txt	BigHornSchomburg1	1194686.089	2459480.187	7/13/2015	0.000	0.000	0.161	A	802.6	25.5	13-07-2015 10:11:23	-12.062	-0.025	0.639	0.251
BigHornSchomburg1_02_13072015_101439.txt	BigHornSchomburg1	1194659.163	2459488.500	7/13/2015	0.000	0.000	0.073	A	802.6	26.6	13-07-2015 10:14:39	0.000	-0.001	0.290	0.250
BigHornSchomburg1_03_13072015_101729.txt	BigHornSchomburg1	1194633.270	2459476.163	7/13/2015	0.000	0.000	0.025	A	803.4	27.4	13-07-2015 10:17:29	0.000	-0.014	0.101	0.250
BigHornSchomburg1_04_13072015_102018.txt	BigHornSchomburg1	1194606.519	2459502.859	7/13/2015	0.000	0.000	0.486	A	803.1	28.2	13-07-2015 10:20:18	-1.453	-0.053	1.951	0.249
BigHornSchomburg1_05_13072015_102245.txt	BigHornSchomburg1	1194627.922	2459504.818	7/13/2015	0.000	0.000	0.065	A	803.1	28.9	13-07-2015 10:22:45	-8.794	-0.076	0.260	0.249
BigHornSchomburg1_06_13072015_102453.txt	BigHornSchomburg1	1194658.888	2459512.304	7/13/2015	0.000	0.000	0.175	A	803.3	29.4	13-07-2015 10:24:53	0.000	-0.088	0.705	0.248
BigHornSchomburg1_07_13072015_102717.txt	BigHornSchomburg1	1194687.880	2459506.812	7/13/2015	0.000	0.000	0.572	A	804.2	29.9	13-07-2015 10:27:17	-0.158	-0.060	2.306	0.248
BigHornSchomburg1_08_13072015_102926.txt	BigHornSchomburg1	1194697.270	2459536.271	7/13/2015	0.000	0.000	0.086	A	805.7	30.4	13-07-2015 10:29:26	-8.367	-0.077	0.346	0.248
BigHornSchomburg1_09_13072015_103146.txt	BigHornSchomburg1	1194655.380	2459538.891	7/13/2015	0.000	0.000	0.028	A	809.1	30.9	13-07-2015 10:31:46	0.000	-0.073	0.112	0.249
BigHornSchomburg1_10_13072015_103400.txt	BigHornSchomburg1	1194631.708	2459521.679	7/13/2015	0.000	0.000	0.278	A	805.0	31.3	13-07-2015 10:34:00	0.000	-0.023	1.126	0.247
BigHornSchomburg1_11_13072015_103605.txt	BigHornSchomburg1	1194607.342	2459533.212	7/13/2015	0.000	0.000	0.163	A	806.8	31.7	13-07-2015 10:36:05	0.000	-0.018	0.660	0.248
BigHornSchomburg1_12_13072015_103752.txt	BigHornSchomburg1	1194582.539	2459542.222	7/13/2015	0.000	0.000	0.367	A	803.4	32.1	13-07-2015 10:37:52	-0.004	-0.017	1.492	0.246
BigHornSchomburg1_13_13072015_104002.txt	BigHornSchomburg1	1194612.926	2459578.100	7/13/2015	0.000	0.000	0.212	A	804.1	32.6	13-07-2015 10:40:02	0.000	-0.006	0.860	0.246
BigHornSchomburg1_14_13072015_104151.txt	BigHornSchomburg1	1194628.553	2459582.998	7/13/2015	0.000	0.000	0.184	A	804.1	32.9	13-07-2015 10:41:51	0.000	-0.005	0.748	0.246
BigHornSchomburg1_15_13072015_104436.txt	BigHornSchomburg1	1194670.124	2459578.277	7/13/2015	0.000	0.000	0.025	A	804.9	33.5	13-07-2015 10:44:36	0.000	-0.092	0.100	0.245
BigHornSchomburg1_16_13072015_104636.txt	BigHornSchomburg1	1194696.925	2459563.370	7/13/2015	0.000	0.000	0.126	A	804.6	34.0	13-07-2015 10:46:36	0.000	-0.056	0.516	0.245
BigHornSchomburg1_17_13072015_104827.txt	BigHornSchomburg1	1194662.659	2459561.631	7/13/2015	0.000	0.000	0.000	A	808.5	34.4	13-07-2015 10:48:27	0.000	-0.020	-0.017	0.246
BigHornSchomburg1_18_13072015_105243.txt	BigHornSchomburg1	1194636.169	2459545.920	7/13/2015	0.000	0.000	0.344	A	809.2	35.3	13-07-2015 10:52:43	0.000	-0.117	1.401	0.245
FossetGulch_01_13072015_111958.txt	FossetGulch	1208138.804	2447143.977	7/13/2015	0.000	0.000	0.180	A	803.0	38.4	13-07-2015 11:19:58	0.000	-0.081	0.745	0.241
FossetGulch_02_13072015_112454.txt	FossetGulch	1207803.160	2447169.452	7/13/2015	0.000	0.000	0.116	A	795.4	38.5	13-07-2015 11:24:54	0.000	-0.065	0.488	0.239
FossetGulch_03_13072015_112932.txt	FossetGulch	1207743.290	2446816.968	7/13/2015	0.000	0.000	0.268	A	794.5	38.5	13-07-2015 11:29:32	0.000	-0.118	1.122	0.238
FossetGulch_04_13072015_113459.txt	FossetGulch	1208138.447	2446793.973	7/13/2015	0.000	0.000	0.385	A	794.5	38.6	13-07-2015 11:34:59	0.000	-0.057	1.617	0.238
FossetGulch_05_13072015_114038.txt	FossetGulch	1208136.496	2446402.314	7/13/2015	0.000	0.000	0.236	A	794.0	38.6	13-07-2015 11:40:38	0.000	-0.058	0.992	0.238
FossetGulch_06_13072015_114524.txt	FossetGulch	1207730.152	2446344.661	7/13/2015	0.000	0.000	0.532	A	798.0	38.8	13-07-2015 11:45:24	0.000	-0.050	2.225	0.239
FossetGulch_07_13072015_115232.txt	FossetGulch	1208487.211	2446403.896	7/13/2015	0.000	0.000	0.063	A	791.3	39.1	13-07-2015 11:52:32	0.000	-0.059	0.264	0.237
FossetGulch_08_13072015_115837.txt	FossetGulch	1208583.319	2446056.935	7/13/2015	0.000	0.007	0.166	A	798.0	39.3	13-07-2015 11:58:37	0.000	0.029	0.694	0.239
SquawCreek_01_13072015_122307.txt	SquawCreek	1209410.913	2444579.943	7/13/2015	0.000	0.000	0.209	A	788.7	40.2	13-07-2015 12:23:07	0.000	-0.128	0.886	0.235
SquawCreek_02_13072015_123346.txt	SquawCreek	1208968.133	2444519.001	7/13/2015	0.000	0.000	0.087	A	791.0	40.2	13-07-2015 12:33:46	-0.012	-0.076	0.367	0.236
SquawCreek_03_13072015_123803.txt	SquawCreek	1208927.320	2444184.295	7/13/2015	0.000	0.008	0.408	A	791.0	40.2	13-07-2015 12:38:03	0.000	0.035	1.730	0.236
SquawCreek_04_13072015_124203.txt	SquawCreek	1208856.763	2443838.622	7/13/2015	0.000	0.000	0.465	A	798.6	40.2	13-07-2015 12:42:03	0.000	-0.005	1.950	0.238
SquawCreek_05_13072015_124915.txt	SquawCreek	1208914.496	2443381.906	7/13/2015	0.000	0.000	0.235	A	798.9	40.5	13-07-2015 12:49:15	0.000	-0.027	0.987	0.238
SquawCreek_06_13072015_125629.txt	SquawCreek	1209324.395	2443323.395	7/13/2015	0.000	0.000	0.179	A	792.6	40.8	13-07-2015 12:56:29	-3.245	-0.014	0.758	0.236
SquawCreek_07_13072015_130222.txt	SquawCreek	1209330.593	2443768.881	7/13/2015	0.000	0.031	0.065	A	792.0	41.3	13-07-2015 13:02:22	0.000	0.131	0.276	0.236
SquawCreek_08_13072015_130720.txt	SquawCreek	1209360.007	2444137.126	7/13/2015	0.000	0.010	0.259	A	795.1	41.7	13-07-2015 13:07:20	0.000	0.043	1.097	0.236
SquawCreek_09_13072015_131412.txt	SquawCreek	1209729.166	2443815.864	7/13/2015	0.000	0.008	0.448	A	795.2	42.3	13-07-2015 13:14:12	-1.376	0.033	1.899	0.236
SquawCreek_10_13072015_131841.txt	SquawCreek	1209795.880	2443609.604	7/13/2015	0.000	0.009	0.381	A	794.4	42.6	13-07-2015 13:18:41	0.000	0.039	1.619	0.235
Stolstierner072115_01_21072015_090449.txt	Stolstierner072115	1185150.324	2468968.062	7/21/2015	0.000	0.000	0.383	A	809.5	28.0	21-07-2015 09:04:49	0.000	0.000	1.523	0.251
Stolstierner072115_02_21072015_090940.txt	Stolstierner072115	1185166.070	2468651.203	7/21/2015	0.000	0.000	0.168	A	812.7	29.0	21-07-2015 09:09:40	-0.507	-0.024	0.667	0.252
Stolstierner072115_03_21072015_092118.txt	Stolstierner072115	1185143.521	2468156.387	7/21/2015	0.000	0.000	0.143	A	811.6	32.1	21-07-2015 09:21:18	0.000	-0.046	0.577	0.249
Stolstierner072115_04_21072015_092703.txt	Stolstierner072115	1185517.033	2467806.098	7/21/2015	0.000	0.000	0.110	A	823.1	33.6	21-07-2015 09:27:03	0.000	-0.034	0.437	0.251
Stolstierner072115_05_21072015_093140.txt	Stolstierner072115	1185541.313	2468163.728	7/21/2015	0.000	0.000	6.015	A	818.5	34.6	21-07-2015 09:31:40	-1.770	-0.038	24.181	0.249
Stolstierner072115_06_21072015_093734.txt	Stolstierner072115	1185509.409	2468594.995	7/21/2015	0.000	0.000	2.231	A	811.6	35.6	21-07-2015 09:37:34	-10.924	-0.020	9.074	0.246
Stolstierner072115_07_21072015_094107.txt	Stolstierner072115	1185913.986	2468602.866	7/21/2015	0.000	0.000	0.064	A	812.3	36.0	21-07-2015 09:41:07	-1.225	-0.023	0.260	0.246
Stolstierner072115_08_21072015_094743.txt	Stolstierner072115	1186320.512	2468607.338	7/21/2015	0.000	0.000	3.492	A	818.0	36.7	21-07-2015 09:47:43	-24.026	-0.014	14.141	0.247
Stolstierner072115_09_21072015_095220.txt	Stolstierner072115	1186713.745	2468591.614	7/21/2015	0.000	0.000	0.405	A	813.5	37.3	21-07-2015 09:52:20	-1.886	-0.021	1.653	0.245
Stolstierner072115_10_21072015_095746.txt	Stolstierner072115	1187150.097	2468563.940	7/21/2015	0.000	0.000	0.074	A	821.0	37.9	21-07-2015 09:57:46	0.000	-0.019	0.299	0.247
Stolstierner072115_11_21072015_100202.txt	Stolstierner072115	1187137.804	2468984.664	7/21/2015	0.000	0.000	0.047	A	816.5	38.4	21-07-2015 10:02:02	0.000	-0.015	0.190	0.245
Stolstierner072115_12_21072015_100642.txt	Stolstierner072115	1187499.347	2468978.441	7/21/2015	0.000	0.000	0.477	A	812.5	39.0	21-07-2015 10:06:42	-2.639	-0.016	1.958	0.243
Stolstierner072115_13_21072015_101932.txt	Stolstierner072115	1187172.735	2469374.749	7/21/2015	0.000	0.000	0.122	A	815.0	40.1	21-07-2015 10:19:32	0.000	-0.020	0.501	0.243
Stolstierner072115_14_21072015_102401.txt	Stolstierner072115	1187525.364	2469366.263	7/21/2015	0.000	0.000	0.086	A	814.1	40.3	21-07-2015 10:24:01	-57.557	-0.003	0.352	0.243
Stolstierner072115_15_21072015_103135.txt	Stolstierner072115	1186761.228	2469365.541	7/21/2015	0.000	0.000	0.136	A	817.6	40.8	21-07-2015 10:31:35	0.000	-0.027	0.558	0.244
Stolstierner072115_16_21072015_104111.txt	Stolstierner072115	1186737.655	2469013.089	7/21/2015	0.000	0.000	0.225	A	832.7	41.4	21-07-2015 10:41:11	0.000	-0.022	0.907	0.248
Stolstierner072115_17_21072015_104829.txt	Stolstierner072115	1186356.670	2468961.162	7/21/2015	0.000	0.000	0.377	A	818.3	41.8	21-07-2015 10:48:29	-14.221	-0.008	1.552	0.243
Stolstierner072115_18_21072015_105355.txt	Stolstierner072115	1186325.198	2469384.519	7/21/2015	0.000	0.000	1.985	A	814.4	41.9	21-07-2015 10:53:55	-12.854	-0.010	8.210	0.242
Stolstierner072115_19_21072015_105843.txt	Stolstierner072115	1186717.129	2469780.935	7/21/2015	0.000	0.000	1.075	A	843.1	41.8	21-07-2015 10:58:43	-14.452	-0.014	4.295	0.250



Filename	Site	Northing	Easting	Date	CH4 Flux	H2S Flux	CO2 Flux	ACCUMULATION CHAMBER	PRESSURE (Hpa)	TEMP (°C)	TIME	CH4 Slope	H2S Slope	CO2 Slope	AcK
Stolstierner072115_20_21072015_110304.txt	Stolstierner072115	1186710.655	2470217.461	7/21/2015	0.000	0.000	0.498	A	806.3	41.7	21-07-2015 11:03:04	-4.996	-0.024	2.081	0.240
Stolstierner072115_21_21072015_110730.txt	Stolstierner072115	1186333.930	2470154.706	7/21/2015	0.000	0.000	0.094	A	805.9	41.6	21-07-2015 11:07:30	-3.534	-0.015	0.391	0.239
Stolstierner072115_22_21072015_111220.txt	Stolstierner072115	1186314.136	2469771.438	7/21/2015	0.000	0.000	0.217	A	836.7	41.7	21-07-2015 11:12:20	0.000	-0.024	0.873	0.249
Stolstierner072115_23_21072015_111646.txt	Stolstierner072115	1185893.186	2469768.703	7/21/2015	0.000	0.000	0.401	A	835.2	41.9	21-07-2015 11:16:46	0.000	-0.024	1.618	0.248
Stolstierner072115_24_21072015_112202.txt	Stolstierner072115	1185500.848	2469797.687	7/21/2015	0.000	0.000	0.314	A	809.6	42.1	21-07-2015 11:22:02	0.000	-0.006	1.307	0.240
Stolstierner072115_25_21072015_112704.txt	Stolstierner072115	1185557.787	2470197.270	7/21/2015	0.000	0.000	0.255	A	811.1	42.2	21-07-2015 11:27:04	0.000	-0.009	1.060	0.241
Stolstierner072115_26_21072015_113116.txt	Stolstierner072115	1185922.875	2470166.632	7/21/2015	0.000	0.000	0.587	A	818.0	42.1	21-07-2015 11:31:16	0.000	-0.012	2.419	0.243
Stolstierner072115_27_21072015_113545.txt	Stolstierner072115	1185530.314	2470572.025	7/21/2015	0.000	0.000	0.665	A	808.5	42.1	21-07-2015 11:35:45	0.000	-0.012	2.774	0.240
Stolstierner072115_28_21072015_114019.txt	Stolstierner072115	1185149.285	2470183.225	7/21/2015	0.000	0.000	0.226	A	810.7	42.2	21-07-2015 11:40:19	0.000	-0.006	0.941	0.240
Stolstierner072115_29_21072015_114407.txt	Stolstierner072115	1185112.890	2469796.784	7/21/2015	0.000	0.000	0.112	A	822.3	42.2	21-07-2015 11:44:07	0.000	-0.018	0.460	0.244
Stolstierner072115_30_21072015_110851.txt	Stolstierner072115	1185127.754	2469375.903	7/21/2015	0.000	0.000	0.427	A	809.5	42.4	21-07-2015 11:48:51	0.000	-0.002	1.781	0.240
Stolstierner072115_31_21072015_115230.txt	Stolstierner072115	1185511.615	2469367.955	7/21/2015	0.000	0.000	0.099	A	820.8	42.5	21-07-2015 11:52:30	0.000	-0.031	0.405	0.243
Stolstierner072115_32_21072015_115945.txt	Stolstierner072115	1185919.465	2469358.627	7/21/2015	0.000	0.000	0.098	A	812.6	42.9	21-07-2015 11:59:45	0.000	-0.009	0.408	0.240
Stolstierner072115_33_21072015_120302.txt	Stolstierner072115	1185910.675	2469005.151	7/21/2015	0.000	0.000	0.750	A	817.5	42.9	21-07-2015 12:03:02	0.000	0.000	3.102	0.242
Stolstierner072115_34_21072015_120734.txt	Stolstierner072115	1185521.205	2468949.716	7/21/2015	0.000	0.000	0.502	A	813.3	43.1	21-07-2015 12:07:34	0.000	-0.037	2.085	0.241
SquawCreek072215_11_22072015_095744.txt	SquawCreek072215	1213745.756	2439149.182	7/22/2015	0.000	0.000	0.267	A	782.4	25.3	22-07-2015 09:57:44	0.000	-0.015	1.089	0.245
SquawCreek072215_12_22072015_100404.txt	SquawCreek072215	1213713.163	2439550.020	7/22/2015	0.000	0.000	0.059	A	782.4	26.3	22-07-2015 10:04:04	-9.070	-0.034	0.240	0.244
SquawCreek072215_13_22072015_101038.txt	SquawCreek072215	1213325.874	2439566.692	7/22/2015	0.000	0.000	0.124	A	779.8	27.4	22-07-2015 10:10:38	0.000	-0.007	0.513	0.243
SquawCreek072215_14_22072015_101836.txt	SquawCreek072215	1213300.292	2439974.259	7/22/2015	0.000	0.000	0.131	A	783.7	28.6	22-07-2015 10:18:36	0.000	-0.014	0.541	0.243
SquawCreek072215_15_22072015_102511.txt	SquawCreek072215	1213315.530	2440328.057	7/22/2015	0.000	0.000	0.156	A	780.9	29.6	22-07-2015 10:25:11	0.000	-0.026	0.646	0.241
SquawCreek072215_16_22072015_103003.txt	SquawCreek072215	1212975.746	2440353.958	7/22/2015	0.000	0.000	0.185	A	781.2	30.4	22-07-2015 10:30:03	0.000	-0.029	0.770	0.241
SquawCreek072215_17_22072015_103511.txt	SquawCreek072215	1212949.134	2440054.353	7/22/2015	0.000	0.000	11.035	A	783.9	31.3	22-07-2015 10:35:11	0.000	-0.047	45.820	0.241
SquawCreek072215_18_22072015_104009.txt	SquawCreek072215	1212617.582	2440414.897	7/22/2015	0.000	0.000	0.362	A	784.1	32.1	22-07-2015 10:40:09	0.000	-0.023	1.505	0.240
SquawCreek072215_19_22072015_105101.txt	SquawCreek072215	1211699.123	2441504.156	7/22/2015	0.000	0.000	0.104	A	785.4	33.4	22-07-2015 10:51:01	0.000	-0.051	0.436	0.240
SquawCreek072215_20_22072015_105607.txt	SquawCreek072215	1211344.510	2441930.689	7/22/2015	0.000	0.000	0.269	A	787.3	33.8	22-07-2015 10:56:07	0.000	-0.048	1.122	0.240
SquawCreek072215_21_22072015_110019.txt	SquawCreek072215	1210957.214	2442380.603	7/22/2015	0.000	0.000	0.217	A	788.0	34.2	22-07-2015 11:00:19	0.000	-0.046	0.907	0.240
SquawCreek072215_22_22072015_110531.txt	SquawCreek072215	1210618.664	2442809.392	7/22/2015	0.000	0.006	0.158	A	788.9	34.6	22-07-2015 11:05:31	0.000	0.024	0.659	0.240
SquawCreek072215_23_22072015_111014.txt	SquawCreek072215	1210154.629	2443410.578	7/22/2015	0.000	0.007	0.185	A	789.5	35.1	22-07-2015 11:10:14	0.000	0.029	0.774	0.240
SquawCreek072215_24_22072015_111602.txt	SquawCreek072215	1210275.276	2443109.354	7/22/2015	0.000	0.000	0.715	A	790.1	35.6	22-07-2015 11:16:02	0.000	-0.037	2.987	0.239
SquawCreek072215_25_22072015_112139.txt	SquawCreek072215	1210782.534	2442495.261	7/22/2015	0.000	0.000	0.206	A	790.1	36.2	22-07-2015 11:21:39	0.000	-0.027	0.864	0.239
SquawCreek072215_26_22072015_112710.txt	SquawCreek072215	1210975.693	2441956.827	7/22/2015	0.000	0.000	0.206	A	788.9	36.8	22-07-2015 11:27:10	0.000	-0.073	0.864	0.238
SquawCreek072215_27_22072015_113807.txt	SquawCreek072215	1211019.936	2441577.049	7/22/2015	0.000	0.000	0.148	A	787.9	38.1	22-07-2015 11:38:07	0.000	-0.046	0.623	0.237
SquawCreek072215_28_22072015_114328.txt	SquawCreek072215	1211276.475	2441593.934	7/22/2015	0.000	0.005	0.269	A	785.8	38.6	22-07-2015 11:43:28	0.000	0.021	1.139	0.236
SquawCreek072215_29_22072015_115108.txt	SquawCreek072215	1211362.334	2441196.406	7/22/2015	0.000	0.000	0.104	A	787.3	39.1	22-07-2015 11:51:08	0.000	-0.007	0.440	0.236
SquawCreek072215_30_22072015_120130.txt	SquawCreek072215	1211803.745	2441205.162	7/22/2015	0.000	0.000	0.011	A	785.5	39.5	22-07-2015 12:01:30	0.000	-0.050	0.048	0.235
SquawCreek072215_31_22072015_120837.txt	SquawCreek072215	1211779.622	2440792.704	7/22/2015	0.000	0.000	0.273	A	786.6	39.9	22-07-2015 12:08:37	0.000	-0.071	1.161	0.235
SquawCreek072215_32_22072015_121958.txt	SquawCreek072215	1212123.864	2440368.130	7/22/2015	0.000	0.000	0.099	A	785.6	40.7	22-07-2015 12:19:58	0.000	-0.033	0.422	0.234
SquawCreek072215_33_22072015_122547.txt	SquawCreek072215	1212526.860	2439937.889	7/22/2015	0.000	0.000	0.186	A	782.3	41.2	22-07-2015 12:25:47	-0.644	-0.041	0.797	0.233
SquawCreek072215_34_22072015_123118.txt	SquawCreek072215	1212908.857	2439574.346	7/22/2015	0.000	0.002	0.114	A	783.8	41.5	22-07-2015 12:31:18	0.000	0.010	0.489	0.233
SquawCreek072215_35_22072015_123700.txt	SquawCreek072215	1213275.131	2439264.692	7/22/2015	0.000	0.000	0.225	A	783.1	41.7	22-07-2015 12:37:00	0.000	-0.115	0.968	0.233
SquawCreek072215_36_22072015_125215.txt	SquawCreek072215	1212148.310	2440857.084	7/22/2015	0.000	0.000	0.665	A	783.0	42.5	22-07-2015 12:52:15	0.000	-0.087	2.865	0.232
PetersonGulch072015_01_20072015_091514.txt	PetersonGulch072015	1205766.847	2454162.968	7/20/2015	0.000	0.000	0.195	A	789.3	29.1	20-07-2015 09:15:14	-35.688	-0.020	0.797	0.244
PetersonGulch072015_02_20072015_092033.txt	PetersonGulch072015	1205788.619	2454584.897	7/20/2015	0.000	0.000	0.205	A	789.3	29.3	20-07-2015 09:20:33	0.000	0.000	0.838	0.244
PetersonGulch072015_03_20072015_092506.txt	PetersonGulch072015	1205376.497	2454564.847	7/20/2015	0.000	0.000	0.177	A	793.7	29.5	20-07-2015 09:25:06	-0.636	-0.011	0.720	0.245
PetersonGulch072015_04_20072015_092859.txt	PetersonGulch072015	1205297.358	2454971.131	7/20/2015	0.000	0.000	0.115	A	794.2	29.8	20-07-2015 09:28:59	-5.405	-0.015	0.471	0.245
PetersonGulch072015_05_20072015_093259.txt	PetersonGulch072015	1204935.312	2454999.894	7/20/2015	0.000	0.000	0.259	A	794.2	30.2	20-07-2015 09:32:59	0.000	0.000	1.058	0.245
PetersonGulch072015_06_20072015_093710.txt	PetersonGulch072015	1204909.400	2455388.054	7/20/2015	0.000	0.000	0.204	A	794.9	30.6	20-07-2015 09:37:10	-1.485	-0.016	0.832	0.245
PetersonGulch072015_07_20072015_094122.txt	PetersonGulch072015	1204570.081	2455397.348	7/20/2015	0.000	0.000	0.230	A	798.3	30.9	20-07-2015 09:41:22	-7.239	-0.014	0.935	0.246
PetersonGulch072015_08_20072015_094518.txt	PetersonGulch072015	1204519.829	2455777.561	7/20/2015	0.000	0.000	0.213	A	793.4	31.1	20-07-2015 09:45:18	-18.037	-0.012	0.873	0.244
PetersonGulch072015_09_20072015_095003.txt	PetersonGulch072015	1204917.522	2455826.096	7/20/2015	0.000	0.000	0.129	A	793.4	31.4	20-07-2015 09:50:03	0.000	0.000	0.531	0.244
PetersonGulch072015_10_20072015_095451.txt	PetersonGulch072015	1204896.948	2456165.371	7/20/2015	0.000	0.000	0.129	A	808.4	31.7	20-07-2015 09:54:51	-0.510	-0.004	0.522	0.248
PetersonGulch072015_11_20072015_095843.txt	PetersonGulch072015	1204547.733	2456194.236	7/20/2015	0.000	0.000	0.228	A	799.4	32.2	20-07-2015 09:58:43	-15.557	-0.001	0.930	0.245
PetersonGulch072015_12_20072015_100222.txt	PetersonGulch072015	1204158.437	2456189.424	7/20/2015	0.000	0.000	0.258	A	801.9	32.6	20-07-2015 10:02:22	0.000	0.000	1.053	0.245
PetersonGulch072015_13_20072015_100653.txt	PetersonGulch072015	1204538.071	2456608.973	7/20/2015	0.000	0.001	0.140	A	800.2	33.1	20-07-2015 10:06:53	0.000	0.003	0.573	0.244
PetersonGulch072015_14_20072015_101032.txt	PetersonGulch072015	1204144.544	2456560.471	7/20/2015	0.000	0.000	0.259	A	799.5	33.5	20-07-2015 10:10:32	-1.088	-0.009	1.061	0.244



Filename	Site	Northing	Easting	Date	CH4 Flux	H2S Flux	CO2 Flux	ACCUMULATION CHAMBER	PRESSURE (Hpa)	TEMP (°C)	TIME	CH4 Slope	H2S Slope	CO2 Slope	AcK
PetersonGulch072015_15_20072015_101448.txt	PetersonGulch072015	1204140.996	2456978.750	7/20/2015	0.000	0.000	0.148	A	805.1	34.0	20-07-2015 10:14:48	-1.645	-0.006	0.605	0.245
PetersonGulch072015_16_20072015_101904.txt	PetersonGulch072015	1204120.605	2457391.221	7/20/2015	0.000	0.000	0.128	A	794.0	34.5	20-07-2015 10:19:04	-1.115	-0.007	0.531	0.241
PetersonGulch072015_17_20072015_102331.txt	PetersonGulch072015	1203745.736	2456997.915	7/20/2015	0.000	0.000	0.135	A	793.6	35.1	20-07-2015 10:23:31	-38.585	-0.011	0.559	0.241
PetersonGulch072015_18_20072015_102719.txt	PetersonGulch072015	1203736.829	2457373.972	7/20/2015	0.000	0.000	0.181	A	793.5	35.7	20-07-2015 10:27:19	-2.296	-0.006	0.752	0.240
PetersonGulch072015_19_20072015_103128.txt	PetersonGulch072015	1203752.180	2457755.359	7/20/2015	0.000	0.000	0.199	A	799.3	36.3	20-07-2015 10:31:28	-1.171	-0.012	0.824	0.242
PetersonGulch072015_20_20072015_103505.txt	PetersonGulch072015	1203748.945	2458142.588	7/20/2015	0.000	0.000	0.064	A	799.8	36.8	20-07-2015 10:35:05	-1.767	-0.007	0.264	0.241
PetersonGulch072015_21_20072015_103959.txt	PetersonGulch072015	1203763.040	2458591.749	7/20/2015	0.000	0.000	0.615	A	798.0	37.2	20-07-2015 10:39:59	0.000	-0.001	2.557	0.240
PetersonGulch072015_22_20072015_104537.txt	PetersonGulch072015	1203344.013	2458987.622	7/20/2015	0.000	0.000	0.106	A	802.5	37.5	20-07-2015 10:45:37	-9.583	-0.006	0.437	0.242
PetersonGulch072015_23_20072015_105021.txt	PetersonGulch072015	1203314.459	2458589.793	7/20/2015	0.000	0.000	0.253	A	802.4	37.8	20-07-2015 10:50:21	0.000	-0.007	1.047	0.241
PetersonGulch072015_24_20072015_105537.txt	PetersonGulch072015	1203295.494	2458203.800	7/20/2015	0.000	0.000	0.138	A	802.4	38.3	20-07-2015 10:55:37	0.000	-0.008	0.573	0.241
PetersonGulch072015_25_20072015_110001.txt	PetersonGulch072015	1203329.258	2457815.629	7/20/2015	0.000	0.000	0.112	A	800.1	38.8	20-07-2015 11:00:01	-6.869	0.000	0.467	0.240
PetersonGulch072015_26_20072015_110628.txt	PetersonGulch072015	1202938.076	2458611.674	7/20/2015	0.000	0.000	0.097	A	804.0	39.8	20-07-2015 11:06:28	0.000	-0.001	0.405	0.240
PetersonGulch072015_27_20072015_111000.txt	PetersonGulch072015	1202956.286	2458959.226	7/20/2015	0.000	0.000	0.265	A	802.1	40.2	20-07-2015 11:10:00	-13.008	-0.001	1.108	0.239
PetersonGulch072015_28_20072015_111411.txt	PetersonGulch072015	1202950.220	2459375.766	7/20/2015	0.000	0.000	0.110	A	796.8	40.6	20-07-2015 11:14:11	-47.619	-0.010	0.463	0.238
PetersonGulch072015_29_20072015_111854.txt	PetersonGulch072015	1202933.652	2459739.966	7/20/2015	0.000	0.000	0.345	A	800.7	40.9	20-07-2015 11:18:54	-59.808	-0.005	1.447	0.238
PetersonGulch072015_30_20072015_112411.txt	PetersonGulch072015	1202553.108	2460166.776	7/20/2015	0.000	0.000	0.041	A	809.9	41.3	20-07-2015 11:24:11	0.000	-0.004	0.171	0.241
PetersonGulch072015_31_20072015_112801.txt	PetersonGulch072015	1202514.084	2459773.483	7/20/2015	0.000	0.000	0.181	A	817.5	41.3	20-07-2015 11:28:01	-12.107	-0.003	0.743	0.243
PetersonGulch072015_32_20072015_113203.txt	PetersonGulch072015	1202526.680	2459399.877	7/20/2015	0.000	0.000	0.230	A	807.1	41.5	20-07-2015 11:32:03	-11.455	-0.002	0.958	0.240
PetersonGulch072015_33_20072015_113704.txt	PetersonGulch072015	1202517.717	2458946.067	7/20/2015	0.000	0.000	0.129	A	802.1	41.8	20-07-2015 11:37:04	-15.078	-0.007	0.541	0.238
PetersonGulch072015_34_20072015_114332.txt	PetersonGulch072015	1202108.199	2459392.297	7/20/2015	0.000	0.000	0.184	A	804.9	42.3	20-07-2015 11:43:32	-41.780	-0.002	0.772	0.239
PetersonGulch072015_35_20072015_115735.txt	PetersonGulch072015	1202138.976	2459810.596	7/20/2015	0.000	0.000	0.492	A	802.9	42.5	20-07-2015 11:57:35	-24.147	-0.006	2.066	0.238
PetersonGulch072015_36_20072015_115945.txt	PetersonGulch072015	1202127.263	2460181.679	7/20/2015	0.000	0.000	0.725	A	802.9	42.3	20-07-2015 11:59:45	-24.236	-0.003	3.047	0.238
PetersonGulch072015_37_20072015_120225.txt	PetersonGulch072015	1202150.668	2460539.187	7/20/2015	0.000	0.000	0.260	A	810.8	42.3	20-07-2015 12:02:25	-46.369	-0.004	1.080	0.240
PetersonGulch072015_38_20072015_120626.txt	PetersonGulch072015	1201777.699	2460562.501	7/20/2015	0.000	0.000	0.247	A	803.7	42.4	20-07-2015 12:06:26	-8.416	-0.005	1.035	0.238
PetersonGulch072015_39_20072015_121016.txt	PetersonGulch072015	1201718.045	2460175.468	7/20/2015	0.000	0.000	0.095	A	799.8	42.4	20-07-2015 12:10:16	-16.725	-0.002	0.400	0.237
PetersonGulch072015_40_20072015_121521.txt	PetersonGulch072015	1201720.721	2459824.256	7/20/2015	0.000	0.000	3.365	A	807.9	42.4	20-07-2015 12:15:21	-7.677	-0.006	14.052	0.239
PetersonGulch072015_41_20072015_122229.txt	PetersonGulch072015	1201364.845	2460566.463	7/20/2015	0.000	0.000	0.130	A	809.1	42.6	20-07-2015 12:22:29	-18.400	-0.001	0.544	0.240
PetersonGulch072015_42_20072015_122546.txt	PetersonGulch072015	1201376.000	2460933.343	7/20/2015	0.000	0.000	1.107	A	799.9	42.6	20-07-2015 12:25:46	0.000	-0.005	4.674	0.237
PetersonGulch072015_43_20072015_122932.txt	PetersonGulch072015	1200988.763	2461053.299	7/20/2015	0.000	0.000	0.257	A	798.0	42.7	20-07-2015 12:29:32	0.000	0.000	1.089	0.236
PetersonGulch072015_44_20072015_123454.txt	PetersonGulch072015	1200465.842	2461150.553	7/20/2015	0.000	0.000	0.311	A	826.5	42.9	20-07-2015 12:34:54	0.000	-0.002	1.272	0.245
PetersonGulch072015_45_20072015_123825.txt	PetersonGulch072015	1200149.553	2461210.750	7/20/2015	0.000	0.000	0.234	A	797.5	42.9	20-07-2015 12:38:25	-4.013	-0.002	0.992	0.236
PetersonGulch072015_46_20072015_124208.txt	PetersonGulch072015	1200147.164	2461567.879	7/20/2015	0.000	0.000	0.148	A	811.3	43.0	20-07-2015 12:42:08	0.000	-0.002	0.616	0.240
PetersonGulch072015_47_20072015_124642.txt	PetersonGulch072015	1199726.635	2461560.977	7/20/2015	0.000	0.000	0.299	A	799.9	43.2	20-07-2015 12:46:42	0.000	-0.003	1.263	0.236
PetersonGulch072015_48_20072015_125012.txt	PetersonGulch072015	1199337.869	2461594.928	7/20/2015	0.000	0.000	0.201	A	803.6	43.3	20-07-2015 12:50:12	-2.849	-0.012	0.848	0.238
PetersonGulch072015_49_20072015_125343.txt	PetersonGulch072015	1198957.966	2461592.642	7/20/2015	0.000	0.000	0.178	A	813.5	43.5	20-07-2015 12:53:43	0.000	-0.008	0.740	0.240
PetersonGulch072015_50_20072015_125818.txt	PetersonGulch072015	1198540.499	2461562.449	7/20/2015	0.000	0.000	0.270	A	801.0	43.8	20-07-2015 12:58:18	0.000	-0.005	1.144	0.236
PetersonGulch072015_51_20072015_130306.txt	PetersonGulch072015	1198537.430	2461991.151	7/20/2015	0.000	0.000	0.407	A	802.6	44.2	20-07-2015 13:03:06	0.000	-0.005	1.719	0.237
PetersonGulch072015_52_20072015_130702.txt	PetersonGulch072015	1198935.475	2461971.666	7/20/2015	0.000	0.000	0.080	A	803.3	44.3	20-07-2015 13:07:02	0.000	-0.010	0.336	0.237
PetersonGulch072015_53_20072015_131045.txt	PetersonGulch072015	1199315.155	2462010.595	7/20/2015	0.000	0.000	0.071	A	803.1	44.5	20-07-2015 13:10:45	-1.137	-0.012	0.302	0.236
PetersonGulch072015_54_20072015_131815.txt	PetersonGulch072015	1198167.787	2461950.767	7/20/2015	0.000	0.000	1.513	A	811.4	45.0	20-07-2015 13:18:15	-13.416	0.000	6.341	0.239
PetersonGulch072015_55_20072015_132212.txt	PetersonGulch072015	1197796.399	2461976.827	7/20/2015	0.000	0.000	0.080	A	806.9	45.1	20-07-2015 13:22:12	0.000	-0.009	0.337	0.237
PetersonGulch072015_56_20072015_132653.txt	PetersonGulch072015	1197693.327	2462360.960	7/20/2015	0.000	0.000	0.503	A	800.6	45.2	20-07-2015 13:26:53	-0.458	-0.006	2.137	0.235
PetersonGulch072015_57_20072015_133046.txt	PetersonGulch072015	1197374.722	2462346.231	7/20/2015	0.000	0.000	0.544	A	805.5	45.2	20-07-2015 13:30:46	-5.493	-0.007	2.297	0.237
PetersonGulch072015_58_20072015_133552.txt	PetersonGulch072015	1196973.417	2462401.649	7/20/2015	0.000	0.000	0.371	A	808.2	45.2	20-07-2015 13:35:52	-0.904	-0.007	1.563	0.237
PetersonGulch072015_59_20072015_134227.txt	PetersonGulch072015	1196577.098	2462318.515	7/20/2015	0.000	0.000	0.371	A	808.5	45.1	20-07-2015 13:42:27	-2.767	-0.010	1.563	0.238
PetersonGulch072015_60_20072015_134654.txt	PetersonGulch072015	1196200.974	2462342.226	7/20/2015	0.000	0.000	0.691	A	816.8	45.1	20-07-2015 13:46:54	0.000	-0.004	2.879	0.240
PetersonGulch072015_61_20072015_135342.txt	PetersonGulch072015	1195795.441	2462362.964	7/20/2015	0.000	0.000	0.184	A	811.8	45.0	20-07-2015 13:53:42	-0.531	-0.004	0.770	0.239
PetersonGulch072015_62_20072015_135856.txt	PetersonGulch072015	1195740.656	2462767.704	7/20/2015	0.000	0.000	0.285	A	812.1	44.9	20-07-2015 13:58:56	0.000	-0.011	1.193	0.239
PetersonGulch072015_63_20072015_140414.txt	PetersonGulch072015	1195733.629	2463218.742	7/20/2015	0.000	0.000	0.203	A	804.7	44.7	20-07-2015 14:04:14	-5.786	-0.003	0.856	0.237
PetersonGulch072015_64_20072015_141115.txt	PetersonGulch072015	1195302.367	2463212.749	7/20/2015	0.000	0.000	0.180	A	802.0	44.3	20-07-2015 14:11:15	0.000	-0.005	0.762	0.236
PetersonGulch072015_65_20072015_142204.txt	PetersonGulch072015	1196138.940	2462791.919	7/20/2015	0.000	0.000	0.264	A	810.6	44.1	20-07-2015 14:22:04	0.000	-0.009	1.103	0.239
PetersonGulch072015_66_20072015_142535.txt	PetersonGulch072015	1196513.171	2462754.600	7/20/2015	0.000	0.000	0.230	A	803.4	43.8	20-07-2015 14:25:35	0.000	-0.008	0.971	0.237
PetersonGulch072015_67_20072015_144943.txt	PetersonGulch072015	1200530.309	2460765.257	7/20/2015	0.000	0.000	1.128	A	812.6	42.7	20-07-2015 14:49:43	0.000	-0.011	4.686	0.241
PetersonGulch072015_68_20072015_145455.txt	PetersonGulch072015	1200934.255	2460642.214	7/20/2015	0.000	0.000	0.152	A	799.4	42.4	20-07-2015 14:54:55	0.000	-0.005	0.641	0.237
PiedraRiver072315_01_23072015_112551.txt	PiedraRiver072315	1191441.366	2464450.792	7/23/2015	0.000	0.000	0.091	A	809.2	29.4	23-07-2015 11:25:51	0.000	-0.023	0.365	0.250

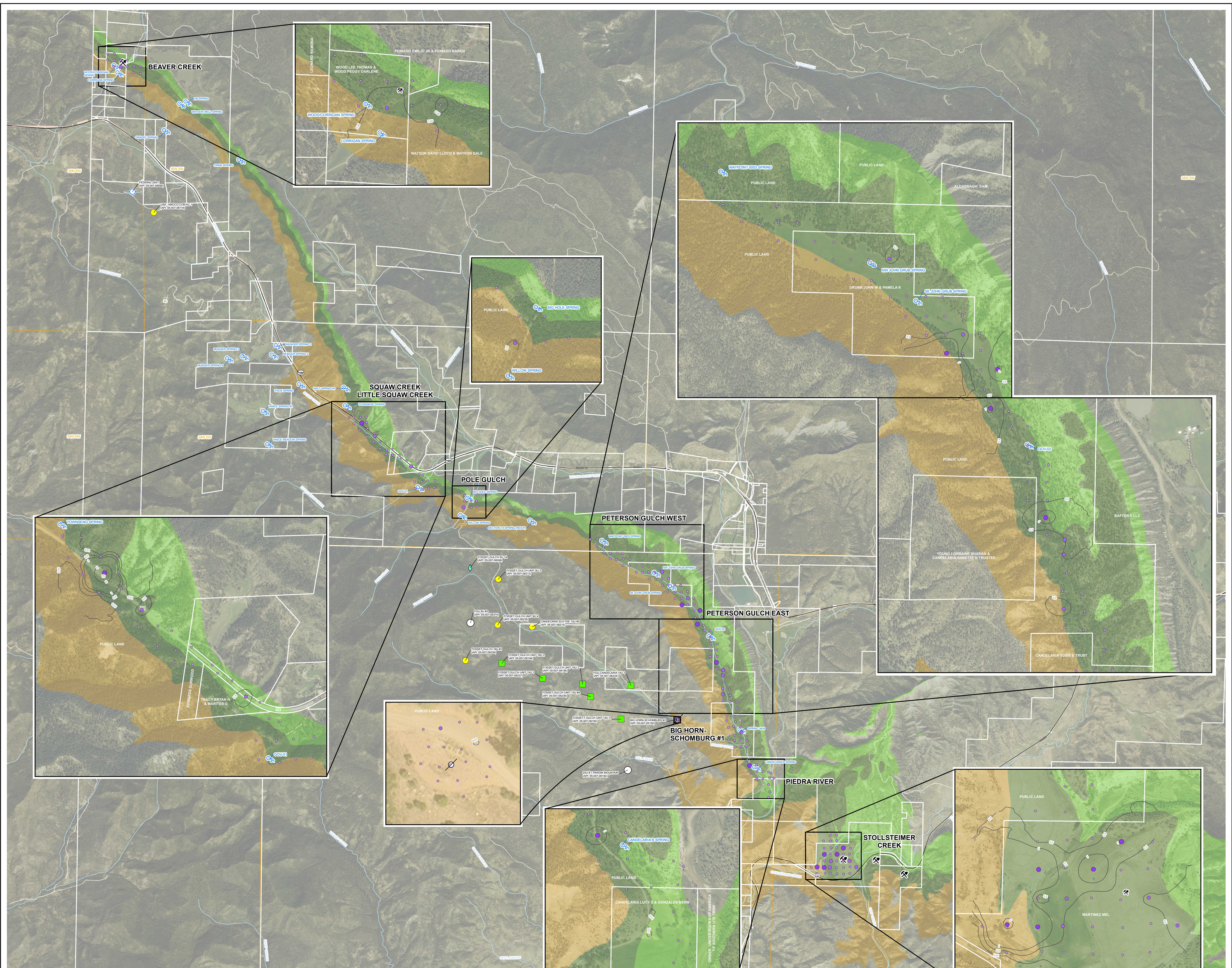
Filename	Site	Northing	Easting	Date	CH4 Flux	H2S Flux	CO2 Flux	ACCUMULATION CHAMBER	PRESSURE (Hpa)	TEMP (°C)	TIME	CH4 Slope	H2S Slope	CO2 Slope	AcK
PiedraRiver072315_02_23072015_114027.txt	PiedraRiver072315	1191408.809	2464004.707	7/23/2015	0.000	0.000	0.040	A	808.8	33.7	23-07-2015 11:40:27	0.000	-0.057	0.161	0.247
PiedraRiver072315_03_23072015_114625.txt	PiedraRiver072315	1191809.589	2463987.480	7/23/2015	0.000	0.004	1.591	A	806.1	35.3	23-07-2015 11:46:25	0.000	0.018	6.511	0.244
PiedraRiver072315_04_23072015_115110.txt	PiedraRiver072315	1192139.834	2463849.988	7/23/2015	0.000	0.000	0.110	A	808.8	36.6	23-07-2015 11:51:10	0.000	-0.085	0.451	0.244
PiedraRiver072315_05_23072015_115932.txt	PiedraRiver072315	1191853.640	2464420.059	7/23/2015	0.000	0.000	0.127	A	808.4	38.4	23-07-2015 11:59:32	0.000	-0.075	0.523	0.243
PiedraRiver072315_06_23072015_120452.txt	PiedraRiver072315	1191424.689	2464830.053	7/23/2015	0.000	0.000	0.029	A	807.2	39.3	23-07-2015 12:04:52	0.000	-0.068	0.118	0.242
PiedraRiver072315_07_23072015_121010.txt	PiedraRiver072315	1191410.948	2465161.219	7/23/2015	0.000	0.000	0.116	A	807.1	39.9	23-07-2015 12:10:10	0.000	-0.008	0.480	0.241
PiedraRiver072315_08_23072015_121723.txt	PiedraRiver072315	1191048.547	2465227.086	7/23/2015	0.000	0.000	0.069	A	806.3	40.8	23-07-2015 12:17:23	-0.881	-0.046	0.286	0.240
PiedraRiver072315_09_23072015_122433.txt	PiedraRiver072315	1191326.235	2465312.560	7/23/2015	0.000	0.006	0.214	A	809.8	41.6	23-07-2015 12:24:33	0.000	0.027	0.888	0.241
PiedraRiver072315_10_23072015_123129.txt	PiedraRiver072315	1191032.707	2465501.313	7/23/2015	0.000	0.006	0.208	A	810.4	42.5	23-07-2015 12:31:29	0.000	0.023	0.866	0.240
PiedraRiver072315_11_23072015_125318.txt	PiedraRiver072315	1190630.006	2465155.421	7/23/2015	0.000	0.000	0.121	A	810.3	44.6	23-07-2015 12:53:18	0.000	-0.122	0.507	0.239
PiedraRiver072315_12_23072015_125621.txt	PiedraRiver072315	1190628.158	2464846.387	7/23/2015	0.000	0.000	0.000	A	809.8	44.8	23-07-2015 12:56:21	0.000	-0.021	-0.120	0.238
PiedraRiver072315_13_23072015_130015.txt	PiedraRiver072315	1190239.060	2464807.219	7/23/2015	0.000	0.006	0.000	A	809.5	45.0	23-07-2015 13:00:15	0.000	0.026	-0.620	0.238
PiedraRiver072315_14_23072015_130843.txt	PiedraRiver072315	1189841.537	2465161.630	7/23/2015	0.000	0.008	0.396	A	810.4	45.2	23-07-2015 13:08:43	0.000	0.033	1.665	0.238
PiedraRiver072315_15_23072015_131005.txt	PiedraRiver072315	1190186.621	2465233.867	7/23/2015	0.000	0.000	0.244	A	810.4	45.2	23-07-2015 13:10:05	0.000	-0.012	1.024	0.238
PiedraRiver072315_16_23072015_131905.txt	PiedraRiver072315	1191003.897	2464815.354	7/23/2015	0.000	0.000	0.013	A	810.3	45.5	23-07-2015 13:19:05	0.000	-0.084	0.054	0.238
PiedraRiver072315_17_23072015_132451.txt	PiedraRiver072315	1190978.426	2464432.821	7/23/2015	0.000	0.015	0.235	A	809.1	45.8	23-07-2015 13:24:51	0.000	0.064	0.992	0.237
PiedraRiver072415_18_24072015_134230.txt	PiedraRiver072415	1192963.037	2463465.379	7/24/2015	0.000	0.000	0.093	A	808.8	25.0	24-07-2015 13:42:30	0.000	-0.008	0.365	0.254
PiedraRiver072415_19_24072015_134553.txt	PiedraRiver072415	1192941.466	2463108.458	7/24/2015	0.000	0.000	0.281	A	808.6	26.1	24-07-2015 13:45:53	0.000	-0.006	1.111	0.253
PiedraRiver072415_20_24072015_135200.txt	PiedraRiver072415	1192943.506	2462696.081	7/24/2015	0.000	0.000	0.150	A	808.3	28.1	24-07-2015 13:52:00	0.000	-0.022	0.599	0.251
PiedraRiver072415_21_24072015_135910.txt	PiedraRiver072415	1193383.169	2462709.007	7/24/2015	0.000	0.000	0.188	A	807.4	30.2	24-07-2015 13:59:10	-1.303	-0.009	0.756	0.249
PiedraRiver072415_22_24072015_140457.txt	PiedraRiver072415	1193744.364	2462696.613	7/24/2015	0.000	0.000	0.006	A	807.4	32.3	24-07-2015 14:04:57	0.000	-0.031	0.026	0.247
PiedraRiver072415_23_24072015_141304.txt	PiedraRiver072415	1194151.391	2462681.347	7/24/2015	0.000	0.000	0.014	A	803.5	34.9	24-07-2015 14:13:04	0.000	-0.004	0.058	0.244
PiedraRiver072415_24_24072015_141820.txt	PiedraRiver072415	1194609.065	2462582.104	7/24/2015	0.000	0.000	0.023	A	803.5	36.7	24-07-2015 14:18:20	0.000	-0.032	0.094	0.243
PiedraRiver072415_25_24072015_142230.txt	PiedraRiver072415	1194853.983	2462606.320	7/24/2015	0.000	0.000	0.366	A	804.1	37.7	24-07-2015 14:22:30	-6.537	-0.030	1.512	0.242
PiedraRiver072415_26_24072015_142805.txt	PiedraRiver072415	1194859.895	2463016.157	7/24/2015	0.000	0.000	0.106	A	804.0	39.0	24-07-2015 14:28:05	0.000	-0.026	0.442	0.241
PiedraRiver072415_27_24072015_143312.txt	PiedraRiver072415	1194877.161	2463394.024	7/24/2015	0.000	0.012	0.134	A	805.0	40.1	24-07-2015 14:33:12	-0.358	0.051	0.558	0.240
PiedraRiver072415_28_24072015_143709.txt	PiedraRiver072415	1194594.886	2463405.440	7/24/2015	0.000	0.000	0.002	A	804.4	40.9	24-07-2015 14:37:09	0.000	-0.084	0.010	0.240
PiedraRiver072415_29_24072015_144102.txt	PiedraRiver072415	1194512.854	2463122.618	7/24/2015	0.000	0.002	0.133	A	805.0	41.6	24-07-2015 14:41:02	0.000	0.010	0.558	0.239
PiedraRiver072415_30_24072015_144557.txt	PiedraRiver072415	1194219.562	2463008.597	7/24/2015	0.000	0.000	0.128	A	805.5	42.1	24-07-2015 14:44:57	0.000	-0.053	0.536	0.239
PiedraRiver072415_31_24072015_145106.txt	PiedraRiver072415	1194167.814	2463411.591	7/24/2015	0.000	0.000	0.060	A	806.1	42.5	24-07-2015 14:51:06	0.000	-0.042	0.251	0.239
PiedraRiver072415_32_24072015_145229.txt	PiedraRiver072415	1193851.081	2463489.454	7/24/2015	0.000	0.013	0.699	A	806.1	42.8	24-07-2015 14:52:29	0.000	0.056	2.929	0.239
PiedraRiver072415_33_24072015_145845.txt	PiedraRiver072415	1193672.641	2463083.218	7/24/2015	0.000	0.011	0.156	A	806.5	43.1	24-07-2015 14:58:45	-0.088	0.046	0.653	0.239
PiedraRiver072415_34_24072015_150241.txt	PiedraRiver072415	1193372.288	2463057.109	7/24/2015	0.000	0.000	0.142	A	804.5	43.2	24-07-2015 15:02:41	-0.068	-0.120	0.599	0.238
PiedraRiver072415_35_24072015_150646.txt	PiedraRiver072415	1193330.799	2463404.137	7/24/2015	0.000	0.000	0.021	A	806.3	43.4	24-07-2015 15:06:46	-2.279	-0.032	0.089	0.238
PiedraRiver072415_36_24072015_151634.txt	PiedraRiver072415	1193324.845	2463825.503	7/24/2015	0.000	0.000	0.164	A	808.0	44.0	24-07-2015 15:16:34	0.000	-0.072	0.689	0.238
PiedraRiver072415_37_24072015_152109.txt	PiedraRiver072415	1192960.222	2463827.815	7/24/2015	0.000	0.000	0.068	A	808.0	44.4	24-07-2015 15:21:09	-1.058	-0.073	0.285	0.238
PiedraRiver072415_38_24072015_152523.txt	PiedraRiver072415	1192526.863	2463885.167	7/24/2015	0.000	0.000	0.000	A	808.4	44.7	24-07-2015 15:25:23	0.000	-0.044	-0.035	0.238
BeaverCreek072715_01_27072015_085843.txt	BeaverCreek072715	1234933.067	2425180.338	7/27/2015	0.000	0.000	0.622	A	777.8	23.4	27-07-2015 08:58:43	0.000	-0.004	2.537	0.245
BeaverCreek072715_02_27072015_090519.txt	BeaverCreek072715	1234968.638	2425560.250	7/27/2015	0.000	0.000	0.111	A	777.5	24.8	27-07-2015 09:05:19	0.000	-0.038	0.454	0.244
BeaverCreek072715_03_27072015_091524.txt	BeaverCreek072715	1234976.377	2426011.736	7/27/2015	0.000	0.000	0.276	A	777.5	26.1	27-07-2015 09:15:24	-2.296	-0.009	1.137	0.243
BeaverCreek072715_04_27072015_092729.txt	BeaverCreek072715	1234532.654	2426392.887	7/27/2015	0.000	0.000	0.089	A	775.0	26.9	27-07-2015 09:27:29	0.000	-0.005	0.367	0.242
BeaverCreek072715_05_27072015_093441.txt	BeaverCreek072715	1234578.634	2425952.222	7/27/2015	0.000	0.000	0.261	A	771.2	27.2	27-07-2015 09:34:41	0.000	-0.005	1.088	0.240
BeaverCreek072715_06_27072015_095011.txt	BeaverCreek072715	1234974.096	2426385.121	7/27/2015	0.000	0.000	0.197	A	774.8	27.9	27-07-2015 09:50:11	0.000	-0.003	0.817	0.241
BeaverCreek072715_07_27072015_100201.txt	BeaverCreek072715	1235354.774	2425573.849	7/27/2015	0.000	0.000	0.255	A	773.4	28.4	27-07-2015 10:02:01	0.000	-0.007	1.061	0.240
BeaverCreek072715_08_27072015_100622.txt	BeaverCreek072715	1235343.787	2425177.563	7/27/2015	0.000	0.000	0.171	A	776.5	28.5	27-07-2015 10:06:22	0.000	-0.010	0.710	0.241
BeaverCreek072715_09_27072015_101229.txt	BeaverCreek072715	1235353.772	2424781.412	7/27/2015	0.000	0.000	0.169	A	776.5	28.8	27-07-2015 10:12:29	0.000	-0.004	0.704	0.241
BeaverCreek072715_10_27072015_101750.txt	BeaverCreek072715	1235747.038	2424791.687	7/27/2015	0.000	0.000	0.061	A	776.7	29.0	27-07-2015 10:17:50	-0.288	-0.073	0.254	0.240
BeaverCreek072715_11_27072015_102239.txt	BeaverCreek072715	1235744.099	2424379.281	7/27/2015	0.000	0.000	0.059	A	774.8	29.3	27-07-2015 10:22:39	0.000	-0.001	0.245	0.240
BeaverCreek072715_12_27072015_102656.txt	BeaverCreek072715	1235354.798	2424362.818	7/27/2015	0.000	0.000	0.121	A	775.6	29.5	27-07-2015 10:26:56	0.000	-0.012	0.506	0.240
BeaverCreek072715_13_27072015_103347.txt	BeaverCreek072715	1234963.968	2424741.422	7/27/2015	0.000	0.000	0.121	A	775.9	30.0	27-07-2015 10:33:47	-0.003	-0.029	0.504	0.239



APPENDIX D

CARBON DIOXIDE FLUX CONTOUR MAP





LEGEND

<p>CARBON DIOXIDE FLUX MEASUREMENT (mol/m² · day)</p> <ul style="list-style-type: none"> ● 0.0000 - 0.0100 ● 0.0101 - 0.5000 ● 0.5001 - 1.0000 ● 1.0001 - 25.0000 ● 25.0001 - 225.0000 ✕ MINE ENTRANCE 	<p>COALBED METHANE WELLS (PETROX RESOURCES, INC.)</p> <ul style="list-style-type: none"> ● PRODUCING ◆ DRILLING ○ SHUT IN ■ WAITING ON INFORMATION ○ PROPOSED WELL ○ ABANDONED PRODUCTION WELL ○ NATURAL SPRING 	<p>— CARBON DIOXIDE FLUX CONTOUR IN mol/m² · day (INTERVAL VARIES)</p> <p>— HIGHWAY</p> <p>— SURFACE WATER</p> <p>— PARCEL BOUNDARY (WHITE)</p> <p>— TOWNSHIP AND RANGE LINES</p>
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GEOLOGY - COLORADO GEOLOGICAL SURVEY, 2011

- KIRTLAND FORMATION (Kk)
- FRUITLAND FORMATION (Kf)
- PICTURED CLIFFS FORMATION (Kpc)

mol/m² · day: MOLES PER SQUARE METER PER DAY

APPENDIX D
CARBON DIOXIDE FLUX CONTOURS
2015 OUTCROP ZONE REPORT
ARCHULETA COUNTY, COLORADO

PETROX RESOURCES AND ELM RIDGE RESOURCES



P:\San Juan Basin GIS\Archuleta\Fruitland_OMR\MXD\Subgas_Flux\2015\2015_ARCH_FIG D CO2 FLUX CONTOURS.mxd

APPENDIX E

**ABANDONED COAL MINE SUBSURFACE SOIL GAS AND
TEMPERATURE MEASUREMENTS**



Sub_CH4_Co	Sub_O2_Con	Sub_H2S_Co	Sub_CO_Con	Sub_CO2	Sub_Temp	Max_PDOP	GPS_Date	GPS_Time	Datfile	Latitude	Longitude
0	20.9	0	0	0.0	10	3.8	7/30/2015	07:36:07am	CHIMNEYROCKMINE_0730	37.162584025	-107.318413445
0	20.9	0	0	0.0	9	4.1	7/30/2015	07:37:59am	CHIMNEYROCKMINE_0730	37.162588397	-107.318579844
0	20.9	0	0	0.0	10	2.0	7/30/2015	07:39:36am	CHIMNEYROCKMINE_0730	37.162576617	-107.318767889
0	20.8	0	0	0.0	10	1.8	7/30/2015	07:41:27am	CHIMNEYROCKMINE_0730	37.162733102	-107.318427720
0	20.9	0	0	0.0	9	2.0	7/30/2015	07:43:06am	CHIMNEYROCKMINE_0730	37.162739732	-107.318611587
0	20.9	0	0	0.0	9	2.6	7/30/2015	07:44:43am	CHIMNEYROCKMINE_0730	37.162735527	-107.318792359
0	20.9	0	0	0.0	10	3.1	7/30/2015	07:47:22am	CHIMNEYROCKMINE_0730	37.162705280	-107.318935124
0	20.6	0	0	200.0	9	2.8	7/30/2015	07:49:27am	CHIMNEYROCKMINE_0730	37.162694628	-107.319118083
0	20.9	0	0	0.0	10	6.7	7/30/2015	07:51:29am	CHIMNEYROCKMINE_0730	37.162536783	-107.319117400
0	20.9	0	0	0.0	10	7.0	7/30/2015	07:53:39am	CHIMNEYROCKMINE_0730	37.162442937	-107.319111520
0	20.9	0	0	0.0	11	6.5	7/30/2015	07:55:47am	CHIMNEYROCKMINE_0730	37.162550263	-107.319254182
0	20.9	0	0	0.0	10	4.2	7/30/2015	07:57:21am	CHIMNEYROCKMINE_0730	37.162691016	-107.319269960
0	20.9	0	0	0.0	10	5.4	7/30/2015	07:59:35am	CHIMNEYROCKMINE_0730	37.162683277	-107.319455232
0	20.3	0	0	500.0	12	5.3	7/30/2015	08:01:18am	CHIMNEYROCKMINE_0730	37.162525880	-107.319424328
0	20.0	0	0	500.0	10	6.5	7/30/2015	08:02:54am	CHIMNEYROCKMINE_0730	37.162402145	-107.319439566
0	20.8	0	0	100.0	12	6.8	7/30/2015	08:04:38am	CHIMNEYROCKMINE_0730	37.162390134	-107.319270815
0	20.9	0	0	100.0	10	7.0	7/30/2015	08:06:38am	CHIMNEYROCKMINE_0730	37.162260434	-107.319272228
0	20.2	0	0	500.0	11	4.4	7/30/2015	08:08:39am	CHIMNEYROCKMINE_0730	37.162279512	-107.319454150
0	20.9	0	0	0.0	10	3.4	7/30/2015	08:10:39am	CHIMNEYROCKMINE_0730	37.162281837	-107.319598894
0	19.9	0	0	600.0	9	3.7	7/30/2015	08:12:49am	CHIMNEYROCKMINE_0730	37.162406771	-107.319586556
0	20.4	0	0	300.0	9	2.5	7/30/2015	08:15:14am	CHIMNEYROCKMINE_0730	37.162539550	-107.319596365
0	20.9	0	0	0.0	10	5.1	7/30/2015	08:17:32am	CHIMNEYROCKMINE_0730	37.162672757	-107.319612889
0	20.8	0	0	100.0	9	5.4	7/30/2015	08:19:35am	CHIMNEYROCKMINE_0730	37.162687281	-107.319773008
0	20.9	0	0	0.0	10	3.4	7/30/2015	08:22:13am	CHIMNEYROCKMINE_0730	37.162681006	-107.319962880
0	20.9	0	0	0.0	10	4.5	7/30/2015	08:24:07am	CHIMNEYROCKMINE_0730	37.162837351	-107.319948447
0	20.4	0	0	300.0	10	3.4	7/30/2015	08:25:47am	CHIMNEYROCKMINE_0730	37.162812841	-107.319812630
0	19.9	0	0	900.0	13	2.2	7/30/2015	08:28:00am	CHIMNEYROCKMINE_0730	37.162819493	-107.319601055
0	20.9	0	0	0.0	12	19.7	7/30/2015	08:29:39am	CHIMNEYROCKMINE_0730	37.162954652	-107.319639420
0	20.4	0	0	300.0	11	3.7	7/30/2015	08:31:21am	CHIMNEYROCKMINE_0730	37.162963421	-107.319803929
0	20.8	0	0	100.0	12	5.0	7/30/2015	08:33:29am	CHIMNEYROCKMINE_0730	37.162941873	-107.319993174
0	20.8	0	0	100.0	11	5.6	7/30/2015	08:38:39am	CHIMNEYROCKMINE_0730	37.163063374	-107.319982897
0	19.9	0	0	700.0	10	5.1	7/30/2015	08:40:18am	CHIMNEYROCKMINE_0730	37.163078813	-107.319828659
0	20.8	0	0	100.0	12	4.5	7/30/2015	08:42:27am	CHIMNEYROCKMINE_0730	37.163091811	-107.319598674
0	20.9	0	0	0.0	15	4.4	7/30/2015	08:44:26am	CHIMNEYROCKMINE_0730	37.163245309	-107.319606327
0	20.9	0	0	0.0	12	6.7	7/30/2015	08:46:25am	CHIMNEYROCKMINE_0730	37.163236772	-107.319815342
0	20.5	0	0	300.0	12	2.8	7/30/2015	08:48:42am	CHIMNEYROCKMINE_0730	37.163228502	-107.319984957
0	20.3	0	0	400.0	12	4.6	7/30/2015	08:50:27am	CHIMNEYROCKMINE_0730	37.163354217	-107.319989904
0	20.9	0	0	0.0	14	2.7	7/30/2015	08:52:19am	CHIMNEYROCKMINE_0730	37.163382683	-107.319805329
0	20.8	0	0	100.0	15	2.1	7/30/2015	08:54:11am	CHIMNEYROCKMINE_0730	37.163370678	-107.319637466
0	20.9	0	0	0.0	14	5.8	7/30/2015	08:56:03am	CHIMNEYROCKMINE_0730	37.163505418	-107.319631619
0	20.7	0	0	100.0	15	3.4	7/30/2015	08:58:02am	CHIMNEYROCKMINE_0730	37.163484405	-107.319800607
0	20.9	0	0	0.0	18	3.3	7/30/2015	08:59:57am	CHIMNEYROCKMINE_0730	37.163506236	-107.319996915
0	20.9	0	0	0.0	16	6.2	7/30/2015	09:02:19am	CHIMNEYROCKMINE_0730	37.163632187	-107.319999889
0	20.9	0	0	0.0	14	5.6	7/30/2015	09:04:44am	CHIMNEYROCKMINE_0730	37.163624574	-107.320176371
0	17.9	0	0	2000.0	13	4.2	7/30/2015	09:06:47am	CHIMNEYROCKMINE_0730	37.163771550	-107.320190602
0	19.9	0	0	900.0	13	3.1	7/30/2015	09:08:59am	CHIMNEYROCKMINE_0730	37.163754535	-107.320344696
0	20.5	0	0	500.0	12	6.7	7/30/2015	09:10:56am	CHIMNEYROCKMINE_0730	37.163612295	-107.320315678
0	20.4	0	0	400.0	11	6.0	7/30/2015	09:12:58am	CHIMNEYROCKMINE_0730	37.163622200	-107.320510021
0	20.5	0	0	400.0	10	6.2	7/30/2015	09:14:38am	CHIMNEYROCKMINE_0730	37.163751073	-107.320503144
0	20.8	0	0	100.0	10	5.8	7/30/2015	09:16:20am	CHIMNEYROCKMINE_0730	37.163648094	-107.320656937
0	20.9	0	0	0.0	10	6.1	7/30/2015	09:17:49am	CHIMNEYROCKMINE_0730	37.163770064	-107.320672903
0	20.9	0	0	0.0	9	6.2	7/30/2015	09:19:22am	CHIMNEYROCKMINE_0730	37.163898563	-107.320685488
0	20.8	0	0	100.0	12	6.2	7/30/2015	09:22:21am	CHIMNEYROCKMINE_0730	37.164053470	-107.320652731
0	20.9	0	0	100.0	10	5.5	7/30/2015	09:24:25am	CHIMNEYROCKMINE_0730	37.164043455	-107.320525719
0	20.5	0	0	400.0	12	6.6	7/30/2015	09:26:18am	CHIMNEYROCKMINE_0730	37.163894890	-107.320507640
0	20.4	0	0	500.0	12	5.0	7/30/2015	09:28:19am	CHIMNEYROCKMINE_0730	37.163909691	-107.320354127
0	20.8	0	0	0.0	12	3.9	7/30/2015	09:30:50am	CHIMNEYROCKMINE_0730	37.164059691	-107.320362853
0	20.9	0	0	0.0	12	5.3	7/30/2015	09:33:00am	CHIMNEYROCKMINE_0730	37.163913446	-107.320160532
0	20.7	0	0	300.0	11	4.9	7/30/2015	09:35:06am	CHIMNEYROCKMINE_0730	37.164059581	-107.320180668
0	20.9	0	0	0.0	11	6.5	7/30/2015	09:36:43am	CHIMNEYROCKMINE_0730	37.164188852	-107.320164776
0	20.9	0	0	0.0	16	4.7	7/30/2015	09:38:05am	CHIMNEYROCKMINE_0730	37.164186962	-107.319997241
0	20.8	0	0	0.0	14	5.7	7/30/2015	09:40:00am	CHIMNEYROCKMINE_0730	37.164056620	-107.320011760
0	20.5	0	0	400.0	15	5.0	7/30/2015	09:42:07am	CHIMNEYROCKMINE_0730	37.163899102	-107.320034168
0	20.9	0	0	0.0	15	3.9	7/30/2015	09:43:45am	CHIMNEYROCKMINE_0730	37.163763347	-107.320015462
0	20.8	0	0	0.0	13	2.6	7/30/2015	09:45:31am	CHIMNEYROCKMINE_0730	37.163643177	-107.319839597
0	20.9	0	0	0.0	15	4.6	7/30/2015	09:47:40am	CHIMNEYROCKMINE_0730	37.163663521	-107.319637625
0	20.8	0	0	0.0	13	2.4	7/30/2015	09:49:54am	CHIMNEYROCKMINE_0730	37.163799497	-107.319655667
0	20.7	0	0	100.0	18	5.5	7/30/2015	09:51:53am	CHIMNEYROCKMINE_0730	37.163795291	-107.319859623
0	20.9	0	0	0.0	15	4.5	7/30/2015	09:53:18am	CHIMNEYROCKMINE_0730	37.163886840	-107.319838698
0	20.8	0	0	200.0	13	6.5	7/30/2015	09:55:54am	CHIMNEYROCKMINE_0730	37.163898633	-107.319690886
0	20.7	0	0	100.0	18	5.5	7/30/2015	09:57:35am	CHIMNEYROCKMINE_0730	37.164047922	-107.319835518
0	20.8	0	0	0.0	15	1.6	7/30/2015	09:59:05am	CHIMNEYROCKMINE_0730	37.164060051	-107.319699908
0	20.8	0	0	100.0	15	6.6	7/30/2015	10:00:30am	CHIMNEYROCKMINE_0730	37.164043514	-107.319516081
0	20.8	0	0	100.0	20	1.8	7/30/2015	10:02:23am	CHIMNEYROCKMINE_0730	37.164046729	-107.319308534
0	20.9	0	0	0.0	15	6.8	7/30/2015	10:03:59am	CHIMNEYROCKMINE_0730	37.164059700	-107.319160208
0	20.8	0	0	100.0	17	1.9	7/30/2015	10:06:05am	CHIMNEYROCKMINE_0730	37.164055260	-107.318997050



Sub_CH4_Co	Sub_O2_Con	Sub_H2S_Co	Sub_CO_Con	Sub_CO2	Sub_Temp	Max_PDOP	GPS_Date	GPS_Time	Datfile	Latitude	Longitude
0	20.9	0	0	0.0	16	6.6	7/30/2015	10:07:20am	CHIMNEYROCKMINE_0730	37.164058460	-107.318843859
0	20.9	0	0	0.0	16	2.3	7/30/2015	10:09:59am	CHIMNEYROCKMINE_0730	37.164044318	-107.318661948
0	20.8	0	0	200.0	21	6.8	7/30/2015	10:11:59am	CHIMNEYROCKMINE_0730	37.16399052	-107.318634968
0	20.8	0	0	0.0	19	2.3	7/30/2015	10:13:36am	CHIMNEYROCKMINE_0730	37.163927599	-107.318474314
0	20.9	0	0	0.0	21	3.1	7/30/2015	10:15:10am	CHIMNEYROCKMINE_0730	37.163807738	-107.318477751
0	20.8	0	0	0.0	22	6.2	7/30/2015	10:17:18am	CHIMNEYROCKMINE_0730	37.163663601	-107.318429144
0	20.8	0	0	100.0	18	6.5	7/30/2015	10:18:52am	CHIMNEYROCKMINE_0730	37.163520069	-107.318441782
0	20.9	0	0	0.0	17	6.4	7/30/2015	10:21:11am	CHIMNEYROCKMINE_0730	37.163389427	-107.318420050
0	20.4	0	0	300.0	18	5.2	7/30/2015	10:23:05am	CHIMNEYROCKMINE_0730	37.163374059	-107.318242085
0	20.8	0	0	100.0	16	6.7	7/30/2015	10:24:53am	CHIMNEYROCKMINE_0730	37.163255175	-107.318241954
0	20.8	0	0	100.0	17	2.3	7/30/2015	10:27:27am	CHIMNEYROCKMINE_0730	37.163127763	-107.318252642
0	20.9	0	0	0.0	26	5.4	7/30/2015	10:29:21am	CHIMNEYROCKMINE_0730	37.162993662	-107.318237146
0	20.9	0	0	0.0	22	6.4	7/30/2015	10:31:09am	CHIMNEYROCKMINE_0730	37.162982464	-107.318436879
0	20.7	0	0	100.0	15	7.0	7/30/2015	10:32:46am	CHIMNEYROCKMINE_0730	37.162856534	-107.318428180
0	20.9	0	0	0.0	18	6.4	7/30/2015	10:36:02am	CHIMNEYROCKMINE_0730	37.162831859	-107.318605719
0	20.7	0	0	100.0	16	4.6	7/30/2015	10:37:56am	CHIMNEYROCKMINE_0730	37.162955366	-107.318582646
0	20.8	0	0	100.0	20	6.4	7/30/2015	10:39:54am	CHIMNEYROCKMINE_0730	37.163121166	-107.318608377
0	20.9	0	0	0.0	24	5.3	7/30/2015	10:41:35am	CHIMNEYROCKMINE_0730	37.163104706	-107.318400711
0	20.9	0	0	0.0	17	4.3	7/30/2015	10:43:13am	CHIMNEYROCKMINE_0730	37.163261320	-107.318449064
0	20.7	0	0	100.0	21	2.5	7/30/2015	10:44:51am	CHIMNEYROCKMINE_0730	37.163239773	-107.318600960
0	20.8	0	0	0.0	19	4.3	7/30/2015	10:46:25am	CHIMNEYROCKMINE_0730	37.163250216	-107.318779655
0	20.9	0	0	0.0	17	5.7	7/30/2015	10:48:16am	CHIMNEYROCKMINE_0730	37.163396317	-107.318934621
0	20.8	0	0	100.0	16	5.6	7/30/2015	10:49:43am	CHIMNEYROCKMINE_0730	37.163373003	-107.318774464
0	20.9	0	0	0.0	20	6.8	7/30/2015	10:51:20am	CHIMNEYROCKMINE_0730	37.163376575	-107.318598436
0	20.9	0	0	0.0	16	6.5	7/30/2015	10:52:59am	CHIMNEYROCKMINE_0730	37.163521341	-107.318609708
0	20.8	0	0	100.0	16	4.0	7/30/2015	10:54:53am	CHIMNEYROCKMINE_0730	37.163512191	-107.318788565
0	20.9	0	0	0.0	22	7.0	7/30/2015	10:56:28am	CHIMNEYROCKMINE_0730	37.163524751	-107.318941494
0	20.9	0	0	0.0	20	6.9	7/30/2015	10:58:18am	CHIMNEYROCKMINE_0730	37.163644518	-107.318949927
0	20.9	0	0	0.0	18	5.8	7/30/2015	10:59:52am	CHIMNEYROCKMINE_0730	37.163630752	-107.318799317
0	20.8	0	0	0.0	18	5.0	7/30/2015	11:01:54am	CHIMNEYROCKMINE_0730	37.163639433	-107.318629610
0	20.9	0	0	0.0	17	6.7	7/30/2015	11:03:25am	CHIMNEYROCKMINE_0730	37.163781716	-107.318651497
0	20.7	0	0	100.0	18	6.5	7/30/2015	11:05:02am	CHIMNEYROCKMINE_0730	37.163777912	-107.318806627
0	20.8	0	0	0.0	18	4.9	7/30/2015	11:06:37am	CHIMNEYROCKMINE_0730	37.163761711	-107.318959113
0	20.7	0	0	200.0	20	3.5	7/30/2015	11:08:17am	CHIMNEYROCKMINE_0730	37.163910821	-107.318989569
0	20.8	0	0	100.0	20	5.3	7/30/2015	11:09:47am	CHIMNEYROCKMINE_0730	37.163915256	-107.318817872
0	20.7	0	0	200.0	22	4.2	7/30/2015	11:11:33am	CHIMNEYROCKMINE_0730	37.163891490	-107.319154309
0	20.9	0	0	0.0	15	4.3	7/30/2015	11:13:37am	CHIMNEYROCKMINE_0730	37.163909553	-107.319330000
0	20.7	0	0	100.0	14	2.7	7/30/2015	11:15:01am	CHIMNEYROCKMINE_0730	37.163897910	-107.319498093
0	20.8	0	0	100.0	18	2.0	7/30/2015	11:16:16am	CHIMNEYROCKMINE_0730	37.163773806	-107.319501641
0	20.8	0	0	100.0	24	6.5	7/30/2015	11:17:43am	CHIMNEYROCKMINE_0730	37.163774941	-107.319323558
0	20.9	0	0	0.0	22	5.8	7/30/2015	11:19:21am	CHIMNEYROCKMINE_0730	37.163772734	-107.319162256
0	20.9	0	0	0.0	26	6.8	7/30/2015	11:20:58am	CHIMNEYROCKMINE_0730	37.163637515	-107.319149546
0	20.8	0	0	100.0	24	6.3	7/30/2015	11:22:24am	CHIMNEYROCKMINE_0730	37.163628852	-107.319308592
0	20.8	0	0	100.0	24	4.6	7/30/2015	11:23:52am	CHIMNEYROCKMINE_0730	37.163629398	-107.319505793
0	20.8	0	0	0.0	24	6.5	7/30/2015	11:25:38am	CHIMNEYROCKMINE_0730	37.163484500	-107.319463548
0	20.4	0	0	400.0	17	5.7	7/30/2015	11:26:54am	CHIMNEYROCKMINE_0730	37.163495899	-107.319310031
0	20.6	0	0	200.0	22	3.8	7/30/2015	11:28:22am	CHIMNEYROCKMINE_0730	37.163499396	-107.319130131
0	20.8	0	0	100.0	21	3.7	7/30/2015	11:29:53am	CHIMNEYROCKMINE_0730	37.163363495	-107.319098294
0	20.5	0	0	300.0	16	6.8	7/30/2015	11:31:19am	CHIMNEYROCKMINE_0730	37.163356074	-107.319309758
0	20.8	0	0	100.0	21	4.3	7/30/2015	11:33:19am	CHIMNEYROCKMINE_0730	37.163350350	-107.319489908
0	20.9	0	0	0.0	20	3.6	7/30/2015	11:34:48am	CHIMNEYROCKMINE_0730	37.163218685	-107.319443360
0	20.8	0	0	0.0	22	5.8	7/30/2015	11:36:36am	CHIMNEYROCKMINE_0730	37.163059792	-107.319440964
0	20.9	0	0	0.0	21	5.0	7/30/2015	11:38:02am	CHIMNEYROCKMINE_0730	37.162940095	-107.319459476
0	20.8	0	0	100.0	22	6.7	7/30/2015	11:39:35am	CHIMNEYROCKMINE_0730	37.162812563	-107.319430173
0	20.8	0	0	0.0	24	3.2	7/30/2015	11:41:14am	CHIMNEYROCKMINE_0730	37.162821797	-107.319272449
0	20.9	0	0	0.0	24	6.7	7/30/2015	11:42:41am	CHIMNEYROCKMINE_0730	37.162817147	-107.319103211
0	20.7	0	0	100.0	23	2.5	7/30/2015	11:44:14am	CHIMNEYROCKMINE_0730	37.162968136	-107.319116312
0	20.8	0	0	0.0	21	3.4	7/30/2015	11:45:40am	CHIMNEYROCKMINE_0730	37.162941986	-107.319272439
0	20.9	0	0	0.0	21	2.8	7/30/2015	11:46:56am	CHIMNEYROCKMINE_0730	37.163079102	-107.319282382
0	20.9	0	0	0.0	23	7.0	7/30/2015	11:48:22am	CHIMNEYROCKMINE_0730	37.163109643	-107.319124145
0	20.8	0	0	0.0	24	2.1	7/30/2015	11:49:49am	CHIMNEYROCKMINE_0730	37.163251291	-107.319270375
0	20.8	0	0	0.0	18	3.3	7/30/2015	11:51:21am	CHIMNEYROCKMINE_0730	37.163253446	-107.319128581
0	20.9	0	0	0.0	24	5.0	7/30/2015	11:52:59am	CHIMNEYROCKMINE_0730	37.163253967	-107.318975066
0	20.9	0	0	0.0	24	6.0	7/30/2015	11:54:30am	CHIMNEYROCKMINE_0730	37.163103186	-107.318950180
0	20.8	0	0	100.0	16	6.5	7/30/2015	11:55:57am	CHIMNEYROCKMINE_0730	37.163100523	-107.318757215
0	20.8	0	0	0.0	22	5.0	7/30/2015	11:57:23am	CHIMNEYROCKMINE_0730	37.162978589	-107.318769337
0	20.8	0	0	0.0	20	2.5	7/30/2015	11:58:50am	CHIMNEYROCKMINE_0730	37.162959544	-107.318941135
0	20.9	0	0	0.0	23	3.7	7/30/2015	12:00:16pm	CHIMNEYROCKMINE_0730	37.162827732	-107.318943813
0	20.8	0	0	100.0	26	5.2	7/30/2015	12:01:46pm	CHIMNEYROCKMINE_0730	37.162818764	-107.318769857
0	20.9	0	0	0.0	7	6.3	7/27/2015	01:30:42pm	COLUMBINE_072715.cor	37.295354763	-107.476028566
0	20.9	0	0	0.0	7	2.6	7/27/2015	01:37:07pm	COLUMBINE_072715.cor	37.295330167	-107.475857304
0	20.9	0	0	0.0	8	4.9	7/27/2015	01:40:01pm	COLUMBINE_072715.cor	37.295327620	-107.475756973
0	20.9	0	0	100.0	8	3.4	7/27/2015	01:42:31pm	COLUMBINE_072715.cor	37.295364641	-107.475533327
0	20.9	0	0	0.0	7	6.5	7/27/2015	01:46:05pm	COLUMBINE_072715.cor	37.295351510	-107.475327521
0	20.9	0	0	300.0	8	2.8	7/27/2015	01:49:30pm	COLUMBINE_072715.cor	37.295355278	-107.475159233
0	20.9	0	0	0.0	9	3.7	7/27/2015	01:51:18pm	COLUMBINE_072715.cor	37.295357830	-107.475015074



Sub_CH4_Co	Sub_O2_Con	Sub_H2S_Co	Sub_CO_Con	Sub_CO2	Sub_Temp	Max_PDOP	GPS_Date	GPS_Time	Datafile	Latitude	Longitude
0	20.9	0	0	100.0	8	5.3	7/27/2015	01:53:25pm	COLUMBINE_072715.cor	37.295492967	-107.475011138
0	20.9	0	0	200.0	8	4.4	7/27/2015	01:55:47pm	COLUMBINE_072715.cor	37.295508070	-107.475129080
0	20.9	0	0	0.0	7	2.5	7/27/2015	01:58:23pm	COLUMBINE_072715.cor	37.295488264	-107.475349814
0	20.9	0	0	0.0	8	6.6	7/27/2015	02:00:35pm	COLUMBINE_072715.cor	37.295472557	-107.475542859
0	20.9	0	0	0.0	8	19.5	7/27/2015	02:02:23pm	COLUMBINE_072715.cor	37.295511716	-107.475684101
0	20.9	0	0	0.0	8	3.5	7/27/2015	02:04:22pm	COLUMBINE_072715.cor	37.295511349	-107.475855467
0	20.9	0	0	100.0	8	3.9	7/27/2015	02:07:38pm	COLUMBINE_072715.cor	37.295429678	-107.476060242
0	20.9	0	0	0.0	8	3.4	7/27/2015	02:10:35pm	COLUMBINE_072715.cor	37.295334486	-107.476053709
0	20.9	0	0	0.0	7	3.7	7/27/2015	02:12:27pm	COLUMBINE_072715.cor	37.295361811	-107.476211457
0	20.9	0	0	0.0	7	3.1	7/27/2015	02:14:40pm	COLUMBINE_072715.cor	37.295503361	-107.476212797
0	20.9	0	2	0.0	7	3.4	7/27/2015	02:16:28pm	COLUMBINE_072715.cor	37.295629698	-107.476212392
0	20.9	0	0	0.0	9	6.3	7/27/2015	02:21:09pm	COLUMBINE_072715.cor	37.295754326	-107.476217881
0	20.8	0	0	0.0	8	3.8	7/27/2015	02:23:41pm	COLUMBINE_072715.cor	37.295726376	-107.476068888
0	20.9	0	0	0.0	8	4.0	7/27/2015	02:25:31pm	COLUMBINE_072715.cor	37.295629833	-107.476089050
0	20.9	0	0	0.0	7	5.6	7/27/2015	02:27:55pm	COLUMBINE_072715.cor	37.295620281	-107.475849099
0	20.9	0	0	0.0	7	5.4	7/27/2015	02:30:44pm	COLUMBINE_072715.cor	37.295673042	-107.475697596
0	20.9	0	0	300.0	8	3.5	7/27/2015	02:32:30pm	COLUMBINE_072715.cor	37.295663278	-107.475518661
0	20.9	0	0	0.0	7	5.3	7/27/2015	02:34:35pm	COLUMBINE_072715.cor	37.295677293	-107.475366915
0	20.9	0	0	0.0	7	4.3	7/27/2015	02:36:26pm	COLUMBINE_072715.cor	37.295648236	-107.475171484
0	20.9	0	0	300.0	8	3.2	7/27/2015	02:38:40pm	COLUMBINE_072715.cor	37.295653604	-107.475012720
0	20.9	0	0	0.0	7	4.8	7/27/2015	02:40:19pm	COLUMBINE_072715.cor	37.295785245	-107.475022048
0	20.9	0	0	200.0	8	5.0	7/27/2015	02:42:58pm	COLUMBINE_072715.cor	37.295780877	-107.475150313
0	20.9	0	0	100.0	9	4.6	7/27/2015	02:45:50pm	COLUMBINE_072715.cor	37.295811219	-107.475395293
0	20.9	0	0	100.0	9	5.6	7/27/2015	02:47:43pm	COLUMBINE_072715.cor	37.295791998	-107.475511524
0	20.9	0	0	0.0	8	4.8	7/27/2015	02:50:45pm	COLUMBINE_072715.cor	37.295762984	-107.475670776
0	20.9	0	0	0.0	8	4.7	7/27/2015	02:52:34pm	COLUMBINE_072715.cor	37.295800575	-107.475784210
0	20.9	0	0	100.0	8	5.3	7/28/2015	07:39:58am	COLUMBINE_072715.cor	37.295924781	-107.474733794
0	20.9	0	0	0.0	9	5.2	7/28/2015	07:43:32am	COLUMBINE_072715.cor	37.295914233	-107.474886758
0	20.9	0	0	0.0	8	6.2	7/28/2015	07:45:55am	COLUMBINE_072715.cor	37.296061309	-107.474686599
0	20.9	0	0	0.0	6	4.3	7/28/2015	07:47:50am	COLUMBINE_072715.cor	37.296111665	-107.474676431
0	20.9	0	0	100.0	6	4.1	7/28/2015	07:50:13am	COLUMBINE_072715.cor	37.296195580	-107.474681939
0	20.9	0	0	0.0	7	6.8	7/28/2015	07:52:41am	COLUMBINE_072715.cor	37.296325275	-107.474664487
0	20.9	0	0	100.0	5	6.3	7/28/2015	07:55:18am	COLUMBINE_072715.cor	37.296494266	-107.474680453
0	20.9	0	0	100.0	7	5.3	7/28/2015	07:57:11am	COLUMBINE_072715.cor	37.296611015	-107.474697707
0	20.9	0	0	100.0	7	6.9	7/28/2015	07:59:14am	COLUMBINE_072715.cor	37.296637058	-107.474828027
0	20.9	0	0	100.0	9	4.5	7/28/2015	08:01:09am	COLUMBINE_072715.cor	37.296492732	-107.474912976
0	20.9	0	0	100.0	8	3.9	7/28/2015	08:03:14am	COLUMBINE_072715.cor	37.296355754	-107.474820252
0	20.9	0	0	0.0	8	5.0	7/28/2015	08:05:37am	COLUMBINE_072715.cor	37.296246393	-107.474842774
0	20.9	0	0	0.0	8	3.7	7/28/2015	08:07:24am	COLUMBINE_072715.cor	37.296096564	-107.474948070
0	20.9	0	0	0.0	8	4.5	7/28/2015	08:09:35am	COLUMBINE_072715.cor	37.296034163	-107.474823833
0	20.9	0	0	0.0	8	3.3	7/28/2015	08:15:55am	COLUMBINE_072715.cor	37.295959802	-107.475189765
0	20.9	0	0	0.0	8	3.2	7/28/2015	08:18:29am	COLUMBINE_072715.cor	37.295916247	-107.475050047
0	20.9	0	0	0.0	8	3.9	7/28/2015	08:21:30am	COLUMBINE_072715.cor	37.296056096	-107.475225407
0	20.9	0	0	0.0	8	4.3	7/28/2015	08:23:58am	COLUMBINE_072715.cor	37.296183348	-107.475065049
0	20.9	0	0	100.0	5	4.8	7/28/2015	08:25:51am	COLUMBINE_072715.cor	37.296365498	-107.475014695
0	20.9	0	0	0.0	6	5.3	7/28/2015	08:27:45am	COLUMBINE_072715.cor	37.296481170	-107.475021540
0	20.9	0	0	100.0	6	3.3	7/28/2015	08:29:24am	COLUMBINE_072715.cor	37.296607110	-107.475068624
0	20.9	0	0	100.0	7	5.3	7/28/2015	08:31:55am	COLUMBINE_072715.cor	37.296633252	-107.475279809
0	20.9	0	0	0.0	6	3.1	7/28/2015	08:34:03am	COLUMBINE_072715.cor	37.296606371	-107.475388790
0	20.9	0	0	100.0	4	3.3	7/28/2015	08:36:16am	COLUMBINE_072715.cor	37.296460720	-107.475392768
0	20.9	0	0	100.0	4	2.7	7/28/2015	08:38:50am	COLUMBINE_072715.cor	37.296471929	-107.475177674
0	20.9	0	0	0.0	6	6.9	7/28/2015	08:41:06am	COLUMBINE_072715.cor	37.296368183	-107.475240106
0	20.9	0	0	0.0	7	4.3	7/28/2015	08:43:33am	COLUMBINE_072715.cor	37.296357781	-107.475379432
0	20.9	0	0	200.0	6	6.3	7/28/2015	08:45:31am	COLUMBINE_072715.cor	37.296235348	-107.475335251
0	20.9	0	0	100.0	8	3.3	7/28/2015	08:48:11am	COLUMBINE_072715.cor	37.296242334	-107.475229605
0	20.9	0	0	100.0	9	6.4	7/28/2015	08:50:10am	COLUMBINE_072715.cor	37.296033079	-107.475353721
0	20.9	0	0	0.0	8	16.0	7/28/2015	08:52:30am	COLUMBINE_072715.cor	37.295919044	-107.475395029
0	20.9	0	0	0.0	8	5.4	7/28/2015	08:54:59am	COLUMBINE_072715.cor	37.295918274	-107.475513727
0	20.9	0	0	0.0	10	3.3	7/28/2015	08:57:42am	COLUMBINE_072715.cor	37.295955987	-107.475713920
0	20.9	0	0	0.0	8	5.9	7/28/2015	08:59:35am	COLUMBINE_072715.cor	37.295897015	-107.475884639
0	20.9	0	0	0.0	5	3.1	7/28/2015	09:01:30am	COLUMBINE_072715.cor	37.295902510	-107.476029458
0	20.9	0	0	0.0	10	3.6	7/28/2015	09:03:19am	COLUMBINE_072715.cor	37.295889751	-107.476224095
0	20.9	0	0	0.0	6	3.4	7/28/2015	09:05:37am	COLUMBINE_072715.cor	37.296079883	-107.476199071
0	20.9	0	0	0.0	9	3.7	7/28/2015	09:09:18am	COLUMBINE_072715.cor	37.296201705	-107.476232000
0	20.9	0	0	0.0	9	6.9	7/28/2015	09:11:32am	COLUMBINE_072715.cor	37.296336656	-107.476273194
0	20.9	0	0	100.0	10	5.6	7/28/2015	09:13:13am	COLUMBINE_072715.cor	37.296451719	-107.476265069
0	20.9	0	0	0.0	7	6.6	7/28/2015	09:15:55am	COLUMBINE_072715.cor	37.296612867	-107.476266873
0	20.9	0	0	0.0	4	5.0	7/28/2015	09:18:01am	COLUMBINE_072715.cor	37.296587629	-107.476058767
0	20.9	0	0	0.0	6	6.1	7/28/2015	09:20:16am	COLUMBINE_072715.cor	37.296493371	-107.476072817
0	20.9	0	0	100.0	7	3.7	7/28/2015	09:22:53am	COLUMBINE_072715.cor	37.296340962	-107.476090734
0	20.9	0	0	0.0	8	13.4	7/28/2015	09:24:58am	COLUMBINE_072715.cor	37.296187242	-107.476054950
0	20.9	0	0	100.0	9	13.2	7/28/2015	09:26:54am	COLUMBINE_072715.cor	37.296064330	-107.476064015
0	20.9	0	0	100.0	9	3.1	7/28/2015	09:29:16am	COLUMBINE_072715.cor	37.296017375	-107.475864934
0	20.9	0	2	100.0	3	4.3	7/28/2015	09:31:31am	COLUMBINE_072715.cor	37.296184421	-107.475863415
0	20.9	0	0	300.0	7	4.9	7/28/2015	09:34:15am	COLUMBINE_072715.cor	37.296359264	-107.475893020
0	20.9	0	0	0.0	11	3.0	7/28/2015	09:36:06am	COLUMBINE_072715.cor	37.296493707	-107.475896166



Sub_CH4_Co	Sub_O2_Con	Sub_H2S_Co	Sub_CO_Con	Sub_CO2	Sub_Temp	Max_PDOP	GPS_Date	GPS_Time	Datfile	Latitude	Longitude
0	20.9	0	1	0.0	7	4.9	7/28/2015	09:38:10am	COLUMBINE_072715.cor	37.296647485	-107.475870303
0	20.9	0	1	100.0	5	12.0	7/28/2015	09:41:03am	COLUMBINE_072715.cor	37.296608627	-107.475743090
0	20.9	0	0	300.0	4	3.4	7/28/2015	09:43:00am	COLUMBINE_072715.cor	37.296507195	-107.475686110
0	20.9	0	0	100.0	12	3.7	7/28/2015	09:45:33am	COLUMBINE_072715.cor	37.296337274	-107.475698274
0	20.9	0	0	0.0	10	6.3	7/28/2015	09:47:42am	COLUMBINE_072715.cor	37.296189779	-107.475728358
0	20.9	0	0	0.0	10	3.7	7/28/2015	09:49:25am	COLUMBINE_072715.cor	37.296097560	-107.475694324
0	20.9	0	5	100.0	8	3.5	7/28/2015	09:51:26am	COLUMBINE_072715.cor	37.296047623	-107.475530954
0	20.9	0	0	0.0	8	8.3	7/28/2015	09:53:56am	COLUMBINE_072715.cor	37.296277520	-107.475516630
0	20.9	0	0	100.0	10	4.9	7/28/2015	09:55:37am	COLUMBINE_072715.cor	37.296375788	-107.475557089
0	20.9	0	0	300.0	10	8.2	7/28/2015	09:57:43am	COLUMBINE_072715.cor	37.296589233	-107.475519696
0	20.9	0	1	100.0	8	4.6	7/28/2015	10:00:53am	COLUMBINE_072715.cor	37.296655829	-107.475552967
0	20.9	0	0	0.0	6	6.9	7/29/2015	07:43:33am	SOLSTEIMERMINE_07291	37.163414815	-107.313447298
0	20.9	0	0	0.0	8	6.5	7/29/2015	07:45:40am	SOLSTEIMERMINE_07291	37.163550606	-107.313454575
0	20.9	0	0	0.0	7	6.0	7/29/2015	07:48:19am	SOLSTEIMERMINE_07291	37.163717269	-107.313483621
0	20.9	0	0	0.0	9	6.0	7/29/2015	07:50:16am	SOLSTEIMERMINE_07291	37.163841672	-107.313440005
0	20.9	0	0	100.0	9	6.6	7/29/2015	07:52:56am	SOLSTEIMERMINE_07291	37.163893600	-107.313284240
0	20.9	0	0	0.0	9	6.0	7/29/2015	07:55:18am	SOLSTEIMERMINE_07291	37.163728755	-107.313267488
0	20.9	0	0	0.0	9	6.2	7/29/2015	07:57:30am	SOLSTEIMERMINE_07291	37.163590085	-107.313298491
0	20.9	0	0	0.0	9	6.4	7/29/2015	07:59:09am	SOLSTEIMERMINE_07291	37.163449023	-107.313336495
0	20.9	0	0	0.0	9	6.4	7/29/2015	08:01:07am	SOLSTEIMERMINE_07291	37.163449279	-107.313154975
0	20.9	0	0	0.0	12	2.9	7/29/2015	08:02:29am	SOLSTEIMERMINE_07291	37.163635344	-107.313130889
0	20.9	0	0	0.0	9	6.0	7/29/2015	08:04:15am	SOLSTEIMERMINE_07291	37.163747577	-107.313123546
0	20.9	0	0	0.0	10	3.8	7/29/2015	08:05:34am	SOLSTEIMERMINE_07291	37.163870469	-107.313124170
0	20.9	0	0	0.0	12	6.6	7/29/2015	08:07:16am	SOLSTEIMERMINE_07291	37.163860410	-107.312921903
0	20.9	0	0	0.0	12	4.8	7/29/2015	08:08:57am	SOLSTEIMERMINE_07291	37.163743498	-107.312960588
0	20.9	0	0	0.0	9	6.8	7/29/2015	08:10:53am	SOLSTEIMERMINE_07291	37.163604349	-107.312956958
0	20.9	0	0	0.0	10	2.5	7/29/2015	08:13:03am	SOLSTEIMERMINE_07291	37.163477020	-107.312949676
0	20.9	0	0	0.0	11	6.9	7/29/2015	08:14:46am	SOLSTEIMERMINE_07291	37.163453583	-107.312777923
0	20.9	0	0	0.0	12	7.0	7/29/2015	08:16:53am	SOLSTEIMERMINE_07291	37.163582730	-107.312799762
0	20.9	0	0	0.0	12	5.0	7/29/2015	08:18:37am	SOLSTEIMERMINE_07291	37.163736134	-107.312768267
0	20.9	0	0	0.0	12	5.6	7/29/2015	08:20:26am	SOLSTEIMERMINE_07291	37.163867349	-107.312778776
0	20.9	0	0	0.0	13	3.4	7/29/2015	08:22:19am	SOLSTEIMERMINE_07291	37.163910826	-107.312633570
0	20.9	0	0	0.0	12	2.2	7/29/2015	08:24:20am	SOLSTEIMERMINE_07291	37.163763493	-107.312604732
0	20.9	0	0	0.0	15	7.0	7/29/2015	08:26:01am	SOLSTEIMERMINE_07291	37.163599237	-107.312605451
0	20.9	0	0	0.0	15	2.9	7/29/2015	08:27:32am	SOLSTEIMERMINE_07291	37.163450678	-107.312625950
0	20.9	0	0	0.0	12	6.4	7/29/2015	08:29:50am	SOLSTEIMERMINE_07291	37.163300097	-107.312615050
0	20.9	0	0	100.0	12	5.1	7/29/2015	08:31:29am	SOLSTEIMERMINE_07291	37.163195247	-107.312602258
0	20.9	0	0	100.0	10	4.3	7/29/2015	08:34:06am	SOLSTEIMERMINE_07291	37.163058842	-107.312573199
0	20.9	0	1	100.0	12	3.4	7/29/2015	08:36:19am	SOLSTEIMERMINE_07291	37.162920329	-107.312573626
0	20.9	0	0	0.0	12	6.0	7/29/2015	08:38:45am	SOLSTEIMERMINE_07291	37.162748279	-107.312610902
0	20.9	0	0	0.0	12	6.4	7/29/2015	08:40:37am	SOLSTEIMERMINE_07291	37.162668900	-107.312612013
0	20.9	0	0	0.0	13	6.5	7/29/2015	08:43:22am	SOLSTEIMERMINE_07291	37.162639415	-107.312790032
0	20.9	0	0	0.0	13	3.0	7/29/2015	08:45:54am	SOLSTEIMERMINE_07291	37.162722432	-107.312779166
0	20.9	0	0	0.0	14	3.9	7/29/2015	08:47:54am	SOLSTEIMERMINE_07291	37.162867704	-107.312732895
0	20.9	0	0	100.0	14	5.3	7/29/2015	08:50:25am	SOLSTEIMERMINE_07291	37.163061501	-107.312766368
0	20.9	0	0	100.0	15	5.2	7/29/2015	08:52:12am	SOLSTEIMERMINE_07291	37.163193084	-107.312772602
0	20.9	0	0	0.0	15	6.0	7/29/2015	08:54:09am	SOLSTEIMERMINE_07291	37.163352366	-107.312817973
0	20.9	0	0	0.0	13	6.0	7/29/2015	08:55:53am	SOLSTEIMERMINE_07291	37.163328411	-107.312953331
0	20.9	0	0	0.0	14	2.5	7/29/2015	08:58:39am	SOLSTEIMERMINE_07291	37.163345286	-107.313129230
0	20.9	0	0	300.0	16	6.1	7/29/2015	09:00:31am	SOLSTEIMERMINE_07291	37.163328126	-107.313248140
0	20.9	0	0	0.0	11	7.0	7/29/2015	09:02:53am	SOLSTEIMERMINE_07291	37.163312011	-107.313460242
0	20.9	0	0	100.0	12	6.1	7/29/2015	09:05:32am	SOLSTEIMERMINE_07291	37.163176101	-107.313445312
0	20.9	0	0	0.0	12	6.7	7/29/2015	09:08:26am	SOLSTEIMERMINE_07291	37.163067245	-107.313452688
0	20.9	0	0	0.0	12	6.6	7/29/2015	09:10:26am	SOLSTEIMERMINE_07291	37.162904292	-107.313449796
0	20.8	0	0	0.0	12	6.3	7/29/2015	09:12:21am	SOLSTEIMERMINE_07291	37.162776833	-107.313461839
0	20.8	0	0	200.0	15	4.3	7/29/2015	09:15:21am	SOLSTEIMERMINE_07291	37.162654352	-107.313470029
0	20.9	0	0	0.0	10	6.3	7/29/2015	09:17:38am	SOLSTEIMERMINE_07291	37.162679284	-107.313280364
0	20.9	0	0	0.0	12	6.1	7/29/2015	09:20:01am	SOLSTEIMERMINE_07291	37.162679412	-107.313107566
0	20.8	0	0	100.0	11	6.7	7/29/2015	09:22:17am	SOLSTEIMERMINE_07291	37.162656221	-107.312961198
0	20.8	0	1	100.0	12	5.8	7/29/2015	09:23:50am	SOLSTEIMERMINE_07291	37.162764452	-107.312924407
0	20.8	0	0	0.0	13	6.4	7/29/2015	09:25:27am	SOLSTEIMERMINE_07291	37.162751347	-107.313100616
0	20.8	0	0	0.0	12	6.7	7/29/2015	09:27:27am	SOLSTEIMERMINE_07291	37.162760058	-107.313296273
0	20.9	0	0	100.0	15	6.3	7/29/2015	09:29:44am	SOLSTEIMERMINE_07291	37.162879932	-107.313302341
0	20.8	0	1	0.0	16	6.2	7/29/2015	09:31:32am	SOLSTEIMERMINE_07291	37.162906672	-107.313124283
0	20.9	0	0	0.0	12	6.7	7/29/2015	09:33:22am	SOLSTEIMERMINE_07291	37.162898750	-107.312942112
0	20.9	0	0	0.0	11	4.3	7/29/2015	09:35:07am	SOLSTEIMERMINE_07291	37.163059390	-107.312949022
0	20.8	0	0	100.0	13	3.0	7/29/2015	09:37:00am	SOLSTEIMERMINE_07291	37.163041924	-107.313093169
0	20.9	0	0	0.0	13	3.8	7/29/2015	09:38:33am	SOLSTEIMERMINE_07291	37.163037324	-107.313293648
0	20.8	0	0	0.0	10	3.6	7/29/2015	09:40:40am	SOLSTEIMERMINE_07291	37.163186792	-107.313281088
0	20.8	0	0	0.0	12	6.9	7/29/2015	09:43:07am	SOLSTEIMERMINE_07291	37.163183819	-107.313084039
0	20.9	0	0	100.0	14	3.8	7/29/2015	09:44:48am	SOLSTEIMERMINE_07291	37.163233620	-107.312941527
0	20.8	0	0	0.0	13	6.6	7/29/2015	09:47:40am	SOLSTEIMERMINE_07291	37.163074338	-107.312416376
0	20.8	0	0	0.0	14	6.9	7/29/2015	09:52:45am	SOLSTEIMERMINE_07291	37.162912554	-107.312434580
0	20.8	0	0	0.0	9	4.8	7/29/2015	09:55:21am	SOLSTEIMERMINE_07291	37.162776015	-107.312419127
0	20.8	0	0	0.0	6	5.9	7/29/2015	09:57:17am	SOLSTEIMERMINE_07291	37.162616655	-107.312418634
0	20.9	0	0	0.0	8	3.7	7/29/2015	10:00:07am	SOLSTEIMERMINE_07291	37.162643069	-107.312274556



Sub_CH4_Co	Sub_O2_Con	Sub_H2S_Co	Sub_CO_Con	Sub_CO2	Sub_Temp	Max_PDOP	GPS_Date	GPS_Time	Datfile	Latitude	Longitude
0	20.8	0	1	0.0	14	5.5	7/29/2015	10:01:57am	SOLSTEIMERMINE_07291	37.162747363	-107.312258894
0	20.9	0	0	0.0	14	4.5	7/29/2015	10:04:19am	SOLSTEIMERMINE_07291	37.162637515	-107.312099178
0	20.9	0	0	0.0	13	5.6	7/29/2015	10:06:05am	SOLSTEIMERMINE_07291	37.162656436	-107.311921877
0	20.9	0	0	0.0	14	6.5	7/29/2015	10:08:12am	SOLSTEIMERMINE_07291	37.162807291	-107.311924821
0	20.9	0	1	100.0	12	6.0	7/29/2015	10:10:14am	SOLSTEIMERMINE_07291	37.162783496	-107.312096396
0	20.9	0	0	0.0	14	7.0	7/29/2015	10:13:18am	SOLSTEIMERMINE_07291	37.162889695	-107.312226572
0	20.9	0	0	0.0	15	6.9	7/29/2015	10:15:31am	SOLSTEIMERMINE_07291	37.163043713	-107.312225377
0	20.9	0	0	0.0	15	5.1	7/29/2015	10:17:42am	SOLSTEIMERMINE_07291	37.162925823	-107.312072251
0	20.9	0	0	100.0	15	4.6	7/29/2015	10:19:26am	SOLSTEIMERMINE_07291	37.162916931	-107.311919126
0	20.9	0	0	0.0	13	7.0	7/29/2015	10:21:07am	SOLSTEIMERMINE_07291	37.163063090	-107.311909158
0	20.8	0	0	100.0	10	3.8	7/29/2015	10:23:32am	SOLSTEIMERMINE_07291	37.163059102	-107.312047074
0	20.9	0	0	0.0	15	4.7	7/29/2015	10:25:34am	SOLSTEIMERMINE_07291	37.163204394	-107.311915241
0	20.9	0	0	0.0	11	6.7	7/29/2015	10:28:07am	SOLSTEIMERMINE_07291	37.163172665	-107.312109260
0	20.8	0	0	0.0	16	4.2	7/29/2015	10:30:38am	SOLSTEIMERMINE_07291	37.163185332	-107.312271522
0	20.9	0	0	0.0	20	4.2	7/29/2015	10:32:20am	SOLSTEIMERMINE_07291	37.163186745	-107.312433718
0	20.9	0	0	0.0	13	2.7	7/29/2015	10:34:29am	SOLSTEIMERMINE_07291	37.163328905	-107.312459327
0	20.9	0	0	0.0	16	4.5	7/29/2015	10:36:53am	SOLSTEIMERMINE_07291	37.163408036	-107.312438352
0	20.9	0	0	0.0	16	4.0	7/29/2015	10:40:10am	SOLSTEIMERMINE_07291	37.163465216	-107.312440693
0	20.9	0	0	0.0	15	4.2	7/29/2015	10:42:46am	SOLSTEIMERMINE_07291	37.163538091	-107.312424506
0	20.9	0	0	0.0	14	3.5	7/29/2015	10:44:12am	SOLSTEIMERMINE_07291	37.163617806	-107.312450475
0	20.9	0	0	0.0	17	3.6	7/29/2015	10:46:02am	SOLSTEIMERMINE_07291	37.163686997	-107.312432147
0	20.9	0	0	0.0	22	3.7	7/29/2015	10:48:01am	SOLSTEIMERMINE_07291	37.163772193	-107.312429821
0	20.9	0	0	0.0	18	3.2	7/29/2015	10:49:44am	SOLSTEIMERMINE_07291	37.163905343	-107.312418661
0	20.9	0	0	0.0	16	6.3	7/29/2015	10:52:18am	SOLSTEIMERMINE_07291	37.163889970	-107.312277037
0	20.9	0	0	0.0	19	6.1	7/29/2015	10:54:21am	SOLSTEIMERMINE_07291	37.163896631	-107.312070221
0	20.9	0	0	0.0	20	6.3	7/29/2015	10:55:51am	SOLSTEIMERMINE_07291	37.163892170	-107.311892280
0	20.9	0	0	0.0	14	2.9	7/29/2015	10:58:07am	SOLSTEIMERMINE_07291	37.163760906	-107.311939385
0	20.9	0	0	0.0	18	4.2	7/29/2015	11:00:14am	SOLSTEIMERMINE_07291	37.163631194	-107.311936843
0	20.9	0	0	0.0	14	6.0	7/29/2015	11:01:56am	SOLSTEIMERMINE_07291	37.163488028	-107.311927213
0	20.8	0	0	0.0	13	6.1	7/29/2015	11:03:35am	SOLSTEIMERMINE_07291	37.163340780	-107.311951803
0	20.8	0	0	100.0	15	2.9	7/29/2015	11:05:50am	SOLSTEIMERMINE_07291	37.163346411	-107.312089153
0	20.9	0	0	0.0	20	4.9	7/29/2015	11:07:36am	SOLSTEIMERMINE_07291	37.163344878	-107.312249764
0	20.9	0	0	0.0	17	1.9	7/29/2015	11:10:02am	SOLSTEIMERMINE_07291	37.163472726	-107.312288277
0	20.9	0	0	0.0	15	4.6	7/29/2015	11:11:45am	SOLSTEIMERMINE_07291	37.163484006	-107.312116501
0	20.9	0	0	0.0	16	4.9	7/29/2015	11:13:26am	SOLSTEIMERMINE_07291	37.163639516	-107.312119488
0	20.9	0	0	0.0	14	4.9	7/29/2015	11:14:39am	SOLSTEIMERMINE_07291	37.163746796	-107.312087759
0	20.9	0	0	0.0	14	3.4	7/29/2015	11:16:09am	SOLSTEIMERMINE_07291	37.163752541	-107.312255838
0	20.9	0	0	0.0	17	4.7	7/29/2015	11:17:42am	SOLSTEIMERMINE_07291	37.163612318	-107.312269374
0	20.9	0	7	0.0	14	2.8	7/28/2015	10:32:09am	TRIPPLES_072815.cor	37.280239409	-107.451746714
0	20.9	0	0	0.0	14	3.3	7/28/2015	10:34:09am	TRIPPLES_072815.cor	37.280194171	-107.451610690
0	20.9	0	0	0.0	14	3.0	7/28/2015	10:35:59am	TRIPPLES_072815.cor	37.280189611	-107.451432426
0	20.9	0	1	200.0	13	2.4	7/28/2015	10:38:09am	TRIPPLES_072815.cor	37.280216694	-107.451262570
0	20.9	0	0	100.0	14	6.9	7/28/2015	10:40:29am	TRIPPLES_072815.cor	37.280217001	-107.451157828
0	20.9	0	0	0.0	14	6.6	7/28/2015	10:42:58am	TRIPPLES_072815.cor	37.280218051	-107.450929640
0	20.9	0	0	0.0	15	2.3	7/28/2015	10:44:40am	TRIPPLES_072815.cor	37.280197447	-107.450747839
0	20.9	0	0	0.0	16	4.2	7/28/2015	10:46:13am	TRIPPLES_072815.cor	37.280198189	-107.450563751
0	20.9	0	0	0.0	14	3.6	7/28/2015	10:47:52am	TRIPPLES_072815.cor	37.280336960	-107.450610204
0	20.9	0	0	0.0	9	4.3	7/28/2015	10:50:30am	TRIPPLES_072815.cor	37.280525377	-107.450599981
0	20.9	0	0	0.0	10	3.2	7/28/2015	10:53:04am	TRIPPLES_072815.cor	37.280467012	-107.450776526
0	20.9	0	0	0.0	14	4.0	7/28/2015	10:55:00am	TRIPPLES_072815.cor	37.280344770	-107.450757255
0	20.9	0	0	300.0	10	4.1	7/28/2015	10:58:00am	TRIPPLES_072815.cor	37.280447164	-107.451060345
0	20.9	0	0	200.0	8	2.5	7/28/2015	10:59:55am	TRIPPLES_072815.cor	37.280480729	-107.450956054
0	20.9	0	0	0.0	10	4.9	7/28/2015	11:01:51am	TRIPPLES_072815.cor	37.280312514	-107.450947365
0	20.9	0	0	0.0	8	5.9	7/28/2015	11:03:30am	TRIPPLES_072815.cor	37.280370794	-107.451087934
0	20.9	0	0	100.0	9	5.3	7/28/2015	11:06:03am	TRIPPLES_072815.cor	37.280471923	-107.451253380
0	20.9	0	0	0.0	7	3.7	7/28/2015	11:09:38am	TRIPPLES_072815.cor	37.280338845	-107.451286524
0	20.9	0	0	0.0	6	4.5	7/28/2015	11:11:07am	TRIPPLES_072815.cor	37.280362591	-107.451386875
0	20.9	0	0	200.0	8	3.0	7/28/2015	11:13:20am	TRIPPLES_072815.cor	37.280475423	-107.451395952
0	20.9	0	0	300.0	6	5.8	7/28/2015	11:15:43am	TRIPPLES_072815.cor	37.280505002	-107.451611583
0	20.9	0	0	100.0	8	5.1	7/28/2015	11:18:35am	TRIPPLES_072815.cor	37.280498899	-107.451814777
0	20.9	0	0	0.0	8	2.8	7/28/2015	11:20:40am	TRIPPLES_072815.cor	37.280471203	-107.451988601
0	20.9	0	0	0.0	9	6.9	7/28/2015	11:22:27am	TRIPPLES_072815.cor	37.280495561	-107.452140926
0	20.9	0	0	0.0	12	2.9	7/28/2015	11:24:12am	TRIPPLES_072815.cor	37.280343790	-107.452150315
0	20.9	0	0	0.0	13	4.2	7/28/2015	11:26:08am	TRIPPLES_072815.cor	37.280357251	-107.451974064
0	20.9	0	0	0.0	13	3.9	7/28/2015	11:27:34am	TRIPPLES_072815.cor	37.280347419	-107.451795690
0	20.9	0	0	0.0	10	6.0	7/28/2015	11:29:16am	TRIPPLES_072815.cor	37.280343451	-107.451615930
0	20.9	0	0	100.0	8	3.0	7/28/2015	11:31:18am	TRIPPLES_072815.cor	37.280200053	-107.451960072
0	20.9	0	0	200.0	7	7.0	7/28/2015	11:32:57am	TRIPPLES_072815.cor	37.280159201	-107.452167087
0	20.9	0	0	0.0	12	3.4	7/28/2015	11:34:46am	TRIPPLES_072815.cor	37.280080878	-107.452094070
0	20.9	0	0	0.0	8	6.6	7/28/2015	11:36:37am	TRIPPLES_072815.cor	37.279906761	-107.452124803
0	20.9	0	0	0.0	5	5.0	7/28/2015	11:38:24am	TRIPPLES_072815.cor	37.279799102	-107.452149090
0	20.9	0	0	0.0	5	5.3	7/28/2015	11:40:16am	TRIPPLES_072815.cor	37.279687268	-107.452109494
0	20.9	0	0	0.0	4	6.9	7/28/2015	11:42:29am	TRIPPLES_072815.cor	37.279507906	-107.452142916
0	20.9	0	0	100.0	6	5.5	7/28/2015	11:44:55am	TRIPPLES_072815.cor	37.279413011	-107.452070858
0	20.9	0	0	200.0	6	4.3	7/28/2015	11:46:52am	TRIPPLES_072815.cor	37.279264457	-107.452081171
0	20.9	0	0	200.0	7	5.7	7/28/2015	11:49:35am	TRIPPLES_072815.cor	37.279281905	-107.451964905



Sub_CH4_Co	Sub_O2_Con	Sub_H2S_Co	Sub_CO_Con	Sub_CO2	Sub_Temp	Max_PDOP	GPS_Date	GPS_Time	Datfile	Latitude	Longitude
0	20.9	0	0	200.0	7	3.3	7/28/2015	11:51:19am	TRIPPLES_072815.cor	37.279224291	-107.451914469
0	20.9	0	0	100.0	7	5.3	7/28/2015	11:52:51am	TRIPPLES_072815.cor	37.279398304	-107.451868604
0	20.9	0	0	100.0	6	4.4	7/28/2015	11:55:19am	TRIPPLES_072815.cor	37.279346308	-107.451694422
0	20.9	0	0	100.0	6	2.8	7/28/2015	11:58:04am	TRIPPLES_072815.cor	37.279241534	-107.451766834
0	20.9	0	0	100.0	6	4.5	7/28/2015	12:00:40pm	TRIPPLES_072815.cor	37.279275514	-107.451555497
0	20.9	0	0	300.0	7	3.7	7/28/2015	12:03:14pm	TRIPPLES_072815.cor	37.279385671	-107.451587896
0	20.9	0	0	300.0	7	4.5	7/28/2015	12:05:19pm	TRIPPLES_072815.cor	37.279385107	-107.451385624
0	20.9	0	0	0.0	8	5.2	7/28/2015	12:07:06pm	TRIPPLES_072815.cor	37.279263456	-107.451428021
0	20.9	0	0	0.0	8	2.9	7/28/2015	12:08:44pm	TRIPPLES_072815.cor	37.279280234	-107.451271582
0	20.9	0	0	0.0	10	2.4	7/28/2015	12:10:51pm	TRIPPLES_072815.cor	37.279360382	-107.451263094
0	20.9	0	0	100.0	6	3.0	7/28/2015	12:12:58pm	TRIPPLES_072815.cor	37.279380118	-107.451053848
0	20.9	0	0	200.0	8	141.3	7/28/2015	12:14:40pm	TRIPPLES_072815.cor	37.279290724	-107.451073459
0	20.9	0	0	100.0	8	3.8	7/28/2015	12:17:03pm	TRIPPLES_072815.cor	37.279280387	-107.450920024
0	20.9	0	0	0.0	11	3.0	7/28/2015	12:20:32pm	TRIPPLES_072815.cor	37.279385508	-107.450944376
0	20.9	0	0	0.0	10	4.8	7/28/2015	12:23:28pm	TRIPPLES_072815.cor	37.279247915	-107.450735876
0	20.9	0	0	0.0	10	3.8	7/28/2015	12:25:51pm	TRIPPLES_072815.cor	37.279331530	-107.450538164
0	20.9	0	0	300.0	6	4.6	7/28/2015	12:31:13pm	TRIPPLES_072815.cor	37.279412464	-107.450519009
0	20.9	0	0	100.0	4	141.3	7/28/2015	12:33:09pm	TRIPPLES_072815.cor	37.279511337	-107.450573372
0	20.9	0	0	100.0	3	15.7	7/28/2015	12:36:03pm	TRIPPLES_072815.cor	37.279549307	-107.450707760
0	20.9	0	0	200.0	6	2.5	7/28/2015	12:39:52pm	TRIPPLES_072815.cor	37.279532449	-107.450874902
0	20.9	0	0	0.0	6	2.7	7/28/2015	12:41:54pm	TRIPPLES_072815.cor	37.279445420	-107.451062174
0	20.9	0	0	0.0	6	2.6	7/28/2015	12:44:49pm	TRIPPLES_072815.cor	37.279458462	-107.451128299
0	20.9	0	0	0.0	4	5.2	7/28/2015	12:47:00pm	TRIPPLES_072815.cor	37.279456567	-107.451225895
0	20.9	0	0	0.0	7	16.7	7/28/2015	12:49:40pm	TRIPPLES_072815.cor	37.279539431	-107.451238214
0	20.9	0	0	0.0	6	6.8	7/28/2015	12:51:30pm	TRIPPLES_072815.cor	37.279497015	-107.451477849
0	20.9	0	0	0.0	6	141.3	7/28/2015	12:54:25pm	TRIPPLES_072815.cor	37.279504663	-107.451625790
0	20.9	0	0	0.0	12	3.9	7/28/2015	12:56:10pm	TRIPPLES_072815.cor	37.279464478	-107.451811934
0	20.9	0	0	100.0	10	5.7	7/28/2015	01:00:19pm	TRIPPLES_072815.cor	37.279481625	-107.451971602
0	20.9	0	0	0.0	8	6.5	7/28/2015	01:02:44pm	TRIPPLES_072815.cor	37.279638252	-107.452018895
0	20.9	0	1	300.0	6	5.5	7/28/2015	01:06:13pm	TRIPPLES_072815.cor	37.279658928	-107.451738462
0	20.9	0	0	200.0	8	3.0	7/28/2015	01:08:37pm	TRIPPLES_072815.cor	37.279633732	-107.451648362
0	20.9	0	0	0.0	8	5.6	7/28/2015	01:10:23pm	TRIPPLES_072815.cor	37.279656989	-107.451519624
0	20.9	0	0	200.0	8	2.1	7/28/2015	01:12:58pm	TRIPPLES_072815.cor	37.279644686	-107.451266429
0	20.9	0	0	200.0	6	5.8	7/28/2015	01:14:31pm	TRIPPLES_072815.cor	37.279611070	-107.451166051
0	20.9	0	0	0.0	9	7.3	7/28/2015	01:18:01pm	TRIPPLES_072815.cor	37.279623676	-107.450938567
0	20.9	0	0	100.0	8	2.4	7/28/2015	01:24:52pm	TRIPPLES_072815.cor	37.279627521	-107.450783713
0	20.9	0	0	200.0	6	2.4	7/28/2015	01:27:06pm	TRIPPLES_072815.cor	37.279800533	-107.450769203
0	20.9	0	0	200.0	9	2.9	7/28/2015	01:29:04pm	TRIPPLES_072815.cor	37.279758750	-107.450609815
0	20.9	0	0	0.0	6	7.0	7/28/2015	01:30:44pm	TRIPPLES_072815.cor	37.279723641	-107.450576141
0	20.9	0	0	100.0	10	7.0	7/28/2015	01:32:37pm	TRIPPLES_072815.cor	37.279933293	-107.450542330
0	20.9	0	0	0.0	10	4.8	7/28/2015	01:33:57pm	TRIPPLES_072815.cor	37.280032492	-107.450581555
0	20.9	0	0	100.0	12	4.9	7/28/2015	01:34:54pm	TRIPPLES_072815.cor	37.280055191	-107.450796685
0	20.9	0	0	0.0	10	4.0	7/28/2015	01:36:15pm	TRIPPLES_072815.cor	37.279910791	-107.450744936
0	20.9	0	0	0.0	10	2.2	7/28/2015	01:38:32pm	TRIPPLES_072815.cor	37.280073465	-107.450998734
0	20.9	0	0	100.0	11	3.7	7/28/2015	01:39:15pm	TRIPPLES_072815.cor	37.280096843	-107.451143562
0	20.9	0	0	500.0	12	6.2	7/28/2015	01:40:29pm	TRIPPLES_072815.cor	37.280046524	-107.451290258
0	20.9	0	0	0.0	15	4.2	7/28/2015	01:42:25pm	TRIPPLES_072815.cor	37.280068772	-107.451451188
0	20.9	0	0	0.0	15	5.4	7/28/2015	01:44:02pm	TRIPPLES_072815.cor	37.280048997	-107.451624363
0	20.9	0	0	200.0	15	5.7	7/28/2015	01:45:55pm	TRIPPLES_072815.cor	37.280055920	-107.451808939
0	21.0	0	0	0.0	15	2.9	7/28/2015	01:47:21pm	TRIPPLES_072815.cor	37.280039780	-107.451981869
0	20.9	0	0	100.0	12	6.4	7/28/2015	01:49:47pm	TRIPPLES_072815.cor	37.279931550	-107.451984535
0	20.9	0	0	300.0	8	3.0	7/28/2015	01:51:24pm	TRIPPLES_072815.cor	37.279783819	-107.452033746
0	20.9	0	0	100.0	9	5.2	7/28/2015	01:53:47pm	TRIPPLES_072815.cor	37.279732559	-107.451736280
0	20.9	0	0	300.0	15	7.8	7/28/2015	01:55:37pm	TRIPPLES_072815.cor	37.279926269	-107.451790548
0	20.9	0	0	0.0	10	3.5	7/28/2015	01:57:32pm	TRIPPLES_072815.cor	37.279864136	-107.451638982
0	20.9	0	0	300.0	9	2.6	7/28/2015	01:59:12pm	TRIPPLES_072815.cor	37.279753629	-107.451600227
0	20.9	0	0	300.0	10	4.0	7/28/2015	02:01:16pm	TRIPPLES_072815.cor	37.279745978	-107.451409646
0	20.9	0	0	0.0	10	3.4	7/28/2015	02:03:05pm	TRIPPLES_072815.cor	37.279902644	-107.451458349
0	20.9	0	0	0.0	9	3.2	7/28/2015	02:04:29pm	TRIPPLES_072815.cor	37.279939184	-107.451256859
0	20.9	0	0	100.0	9	2.5	7/28/2015	02:06:07pm	TRIPPLES_072815.cor	37.279886537	-107.451053925
0	20.9	0	0	1000.0	7	6.8	7/28/2015	02:06:49pm	TRIPPLES_072815.cor	37.279872228	-107.450904652
0	20.9	0	0	200.0	8	2.9	7/28/2015	02:08:47pm	TRIPPLES_072815.cor	37.279804484	-107.450904507
0	20.9	0	0	400.0	8	5.0	7/28/2015	02:10:36pm	TRIPPLES_072815.cor	37.279734595	-107.451042243
0	20.9	0	0	100.0	4	6.7	7/28/2015	02:12:16pm	TRIPPLES_072815.cor	37.279750244	-107.451236222

APPENDIX F
NATURAL SPRINGS LABORATORY ANALYTICAL REPORTS





75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

11 June 2015

Devin Hencmann
LT Environmental
2243 Main Ave, Suite 3
Durango, CO 81301
RE: Archuletta Springs

Enclosed are the results of analyses for samples received by the laboratory on 05/21/15 16:33.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Debbie Zufelt". The signature is written in a cursive, flowing style.

Debbie Zufelt
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water



LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Thick Spring	1505202-01	Water	05/21/15 12:15	05/21/15 16:33
Willow Spring	1505202-02	Water	05/21/15 13:30	05/21/15 16:33
Walt Spring	1505202-03	Water	05/21/15 14:20	05/21/15 16:33

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Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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Thick Spring

1505202-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	132	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Total*	132	10.0		mg/L	2	06/01/15	2320 B		JLM
Bromide	0.388	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	71.0	10.0	5.00	mg/L	1	06/02/15	4500-Cl- C		JLM
Conductivity*	417	10.0		uS/cm	1	05/21/15	2510 B		ACH
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/05/15	4500-F- C		ABP
Nitrate/Nitrite as N*	<0.020	0.020	0.010	mg/L	1	06/03/15	EPA353.2		KLJ
pH*	6.70			pH Units	1	05/21/15	EPA150.1		ACH
TDS*	285	10.0		mg/L	1	05/27/15	EPA160.1		ABP
Sulfate	25.7	10.0	1.68	mg/L	1	06/02/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	65.3	0.020	0.003	mg/L	1	05/27/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	05/27/15	EPA200.7		JGS
Magnesium*	14.2	0.100	0.032	mg/L	1	05/27/15	EPA200.7		JGS
Potassium*	1.50	1.00	0.335	mg/L	1	05/27/15	EPA200.7		JGS
Sodium*	18.3	1.00	0.305	mg/L	1	05/27/15	EPA200.7		JGS

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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Willow Spring

1505202-02 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	152	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Total*	152	10.0		mg/L	2	06/01/15	2320 B		JLM
Bromide	0.295	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	11.0	10.0	5.00	mg/L	1	06/02/15	4500-Cl- C		JLM
Conductivity*	272	10.0		uS/cm	1	05/21/15	2510 B		ACH
Fluoride*	0.317	0.250	0.0550	mg/L	1	06/05/15	4500-F- C		ABP
Nitrate/Nitrite as N*	<0.020	0.020	0.010	mg/L	1	06/03/15	EPA353.2		KLJ
pH*	7.04			pH Units	1	05/21/15	EPA150.1		ACH
TDS*	135	10.0		mg/L	1	05/27/15	EPA160.1		ABP
Sulfate	21.9	10.0	1.68	mg/L	1	06/02/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	40.8	0.020	0.003	mg/L	1	05/27/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	05/27/15	EPA200.7		JGS
Magnesium*	6.43	0.100	0.032	mg/L	1	05/27/15	EPA200.7		JGS
Potassium*	1.52	1.00	0.335	mg/L	1	05/27/15	EPA200.7		JGS
Sodium*	17.5	1.00	0.305	mg/L	1	05/27/15	EPA200.7		JGS

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Debbie Zufelt, Reports Manager

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LT Environmental
2243 Main Ave, Suite 3
Durango CO, 81301

Project: Archuletta Springs
Project Name / Number: Archuletta Springs
Project Manager: Devin Hencmann

Reported:
06/11/15 16:08

Walt Spring

1505202-03 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	140	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	2	06/01/15	2320 B		JLM
Alkalinity, Total*	140	10.0		mg/L	2	06/01/15	2320 B		JLM
Bromide	<1.00	1.00	0.730	mg/L	10	06/09/15	4500-Br- B		ABP
Chloride*	<10.0	10.0	5.00	mg/L	1	06/02/15	4500-Cl- C		JLM
Conductivity*	283	10.0		uS/cm	1	05/21/15	2510 B		ACH
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/05/15	4500-F- C		ABP
Nitrate/Nitrite as N*	<0.020	0.020	0.010	mg/L	1	06/03/15	EPA353.2		KLJ
pH*	7.26			pH Units	1	05/21/15	EPA150.1		ACH
TDS*	220	10.0		mg/L	1	05/27/15	EPA160.1		ABP
Sulfate	47.9	10.0	1.68	mg/L	1	06/02/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	41.4	0.020	0.003	mg/L	1	05/27/15	EPA200.7		JGS
Iron*	0.072	0.050	0.003	mg/L	1	05/27/15	EPA200.7		JGS
Magnesium*	13.2	0.100	0.032	mg/L	1	05/27/15	EPA200.7		JGS
Potassium*	1.41	1.00	0.335	mg/L	1	05/27/15	EPA200.7		JGS
Sodium*	11.1	1.00	0.305	mg/L	1	05/27/15	EPA200.7		JGS

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B505201 - General Prep - Wet Chem

Duplicate (B505201-DUP3)		Source: 1505204-01			Prepared & Analyzed: 05/21/15					
Conductivity	83.4	10.0	uS/cm		94.3			12.3	20	
Reference (B505201-SRM1)					Prepared & Analyzed: 05/21/15					
Conductivity	474		uS/cm	520		91.2	90-110			

Batch B505206 - General Prep - Wet Chem

Duplicate (B505206-DUP3)		Source: 1505204-01			Prepared & Analyzed: 05/21/15					
pH	6.36		pH Units		6.34			0.315	20	
Reference (B505206-SRM1)					Prepared & Analyzed: 05/21/15					
pH	8.99		pH Units	9.15		98.3	8142-102.1			

Batch B506001 - General Prep - Wet Chem

Blank (B506001-BLK1)					Prepared & Analyzed: 06/05/15					
Fluoride	ND	0.250	mg/L							
LCS (B506001-BS1)					Prepared & Analyzed: 06/05/15					
Fluoride	0.977	0.250	mg/L	1.00		97.7	85-115			
LCS Dup (B506001-BSD1)					Prepared & Analyzed: 06/05/15					
Fluoride	0.993	0.250	mg/L	1.00		99.3	85-115	1.62	20	

Batch B506010 - General Prep - Wet Chem

Blank (B506010-BLK1)					Prepared & Analyzed: 05/27/15					
TDS	ND	10.0	mg/L							

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506010 - General Prep - Wet Chem

Duplicate (B506010-DUP2)		Source: 1505197-01			Prepared & Analyzed: 05/27/15					
TDS	195	10.0	mg/L		200			2.53	20	
Reference (B506010-SRM1)					Prepared & Analyzed: 05/27/15					
TDS	405	10.0	mg/L	440		92.0	85-115			

Batch B506014 - General Prep - Wet Chem

Blank (B506014-BLK1)					Prepared & Analyzed: 06/01/15					
Alkalinity, Total	ND	10.0	mg/L							
LCS (B506014-BS1)					Prepared & Analyzed: 06/01/15					
Alkalinity, Total	96.0	10.0	mg/L	100		96.0	85-115			
LCS Dup (B506014-BSD1)					Prepared & Analyzed: 06/01/15					
Alkalinity, Total	99.0	10.0	mg/L	100		99.0	85-115	3.08	20	

Batch B506018 - General Prep - Wet Chem

Blank (B506018-BLK1)					Prepared & Analyzed: 06/02/15					
Chloride	ND	10.0	mg/L							
LCS (B506018-BS1)					Prepared & Analyzed: 06/02/15					
Chloride	99.0	10.0	mg/L	100		99.0	85-115			
LCS Dup (B506018-BSD1)					Prepared & Analyzed: 06/02/15					
Chloride	109	10.0	mg/L	100		109	85-115	9.62	20	

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506022 - General Prep - Wet Chem

Blank (B506022-BLK1)										
Prepared & Analyzed: 06/02/15										
Sulfate	ND	10.0	mg/L							
LCS (B506022-BS1)										
Prepared & Analyzed: 06/02/15										
Sulfate	47.9	10.0	mg/L	50.0		95.8	85-115			
LCS Dup (B506022-BSD1)										
Prepared & Analyzed: 06/02/15										
Sulfate	51.9	10.0	mg/L	50.0		104	85-115	7.96	20	

Batch B506033 - General Prep - Wet Chem

Blank (B506033-BLK1)										
Prepared & Analyzed: 06/03/15										
Nitrate/Nitrite as N	ND	0.020	mg/L							
LCS (B506033-BS1)										
Prepared & Analyzed: 06/03/15										
Nitrate/Nitrite as N	1.09	0.020	mg/L	1.00		109	90-110			
LCS Dup (B506033-BSD1)										
Prepared & Analyzed: 06/03/15										
Nitrate/Nitrite as N	1.05	0.020	mg/L	1.00		105	90-110	3.74	20	

Batch B506104 - General Prep - Wet Chem

Blank (B506104-BLK1)										
Prepared & Analyzed: 06/09/15										
Bromide	ND	0.100	mg/L							
LCS (B506104-BS1)										
Prepared & Analyzed: 06/09/15										
Bromide	0.574	0.100	mg/L	0.600		95.7	85-115			

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B506104 - General Prep - Wet Chem

LCS Dup (B506104-BSD1)

Prepared & Analyzed: 06/09/15

Bromide	0.602	0.100	mg/L	0.600		100	85-115	4.74	20	
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Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B505207 - Dissolved Metals, E200.7/E200.8

Blank (B505207-BLK1)

Prepared: 05/26/15 Analyzed: 05/27/15

Calcium	ND	0.020	mg/L							
Iron	ND	0.050	mg/L							
Magnesium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							

LCS (B505207-BS1)

Prepared: 05/26/15 Analyzed: 05/27/15

Calcium	4.86	0.020	mg/L	5.00		97.1	85-115			
Iron	5.00	0.050	mg/L	5.00		100	85-115			
Magnesium	25.6	0.100	mg/L	25.0		103	85-115			
Potassium	9.71	1.00	mg/L	10.0		97.1	85-115			
Sodium	7.88	1.00	mg/L	8.10		97.3	85-115			

LCS Dup (B505207-BSD1)

Prepared: 05/26/15 Analyzed: 05/27/15

Calcium	4.86	0.020	mg/L	5.00		97.1	85-115	0.0459	20	
Iron	4.99	0.050	mg/L	5.00		99.8	85-115	0.244	20	
Magnesium	25.7	0.100	mg/L	25.0		103	85-115	0.183	20	
Potassium	9.64	1.00	mg/L	10.0		96.4	85-115	0.699	20	
Sodium	7.87	1.00	mg/L	8.10		97.1	85-115	0.205	20	

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Debbie Zufelt

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 06/11/15 16:08
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Notes and Definitions

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
*Results reported on as received basis unless designated as dry.
- RPD Relative Percent Difference
- LCS Laboratory Control Sample (Blank Spike)
- RL Report Limit
- MDL Method Detection Limit

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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Project Information

LT Environmental

2243 Main Ave, Suite 3
Durango, CO 81301

Laboratory PM: Debbie Zufelt

Phone:(970) 385-1096

Fax:-

LTE

5/21/2015

Project Name:	Archuletta Springs	Invoice To:	LT Environmental
Project Number:	[none]	Invoice Bid:	(list pricing)
Client PM:	Devin Hencmann	Invoice Manager:	Julie Linn
Comments:			

Analysis	Comment
Iron Dissolved by ICP	
Alkalinity, Carbonate	
Alkalinity, Hydroxide	
Alkalinity, Total	
Bromide	
Calcium Dissolved by ICP	
Chloride	
Alkalinity, Bicarbonate	
Fluoride	
Sulfate	
Magnesium Dissolved by ICP	
Nitrate/Nitrite as N	
pH	
Potassium Dissolved by ICP	
Sodium Dissolved by ICP	
Solids, Total Dissolved (TDS)	
Conductivity	



75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

11 June 2015

Devin Hencmann
LT Environmental
2243 Main Ave, Suite 3
Durango, CO 81301
RE: Archuleta Springs

Enclosed are the results of analyses for samples received by the laboratory on 05/26/15 15:40.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Debbie Zufelt". The signature is written in a cursive, flowing style.

Debbie Zufelt
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water



LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Section 14 Reich Spring	1505214-01	Water	05/26/15 13:26	05/26/15 15:40

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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Section 14 Reich Spring

1505214-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
General Chemistry									
Alkalinity, Bicarbonate*	252	10.0		mg/L	1	06/03/15	2320 B		LLG
Alkalinity, Carbonate*	<10.0	10.0		mg/L	1	06/03/15	2320 B		LLG
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	1	06/03/15	2320 B		LLG
Alkalinity, Total*	252	10.0		mg/L	1	06/03/15	2320 B		LLG
Bromide	0.416	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	<10.0	10.0	5.00	mg/L	1	06/05/15	4500-Cl- C		LLG
Conductivity*	512	10.0		uS/cm	1	05/27/15	2510 B		ACH
Fluoride*	0.474	0.250	0.0550	mg/L	1	06/05/15	4500-F- C		ABP
Nitrate/Nitrite as N*	<0.020	0.020	0.010	mg/L	1	06/03/15	EPA353.2		KLJ
pH*	7.17			pH Units	1	05/27/15	EPA150.1		ACH
TDS*	295	10.0		mg/L	1	06/02/15	EPA160.1		ABP
Sulfate	65.0	10.0	1.68	mg/L	1	06/03/15	4500-SO42- E		ABP
Dissolved Metals by ICP									
Calcium*	86.6	0.020	0.003	mg/L	1	06/02/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	06/02/15	EPA200.7		JGS
Magnesium*	9.19	0.100	0.032	mg/L	1	06/02/15	EPA200.7		JGS
Potassium*	1.51	1.00	0.335	mg/L	1	06/02/15	EPA200.7		JGS
Sodium*	25.2	1.00	0.305	mg/L	1	06/02/15	EPA200.7		JGS

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B505229 - General Prep - Wet Chem

Duplicate (B505229-DUP1)		Source: 1505214-01			Prepared & Analyzed: 05/27/15					
pH	7.20		pH Units		7.17			0.418	20	
Reference (B505229-SRM1)					Prepared & Analyzed: 05/27/15					
pH	9.13		pH Units		9.15	99.8	8142-102.14			

Batch B505230 - General Prep - Wet Chem

Duplicate (B505230-DUP1)		Source: 1505214-01			Prepared & Analyzed: 05/27/15					
Conductivity	523	10.0	uS/cm		512			2.13	20	
Reference (B505230-SRM1)					Prepared & Analyzed: 05/27/15					
Conductivity	568		uS/cm		520	109	90-110			

Batch B506001 - General Prep - Wet Chem

Blank (B506001-BLK1)					Prepared & Analyzed: 06/05/15					
Fluoride	ND	0.250	mg/L							
LCS (B506001-BS1)					Prepared & Analyzed: 06/05/15					
Fluoride	0.977	0.250	mg/L		1.00	97.7	85-115			
LCS Dup (B506001-BSD1)					Prepared & Analyzed: 06/05/15					
Fluoride	0.993	0.250	mg/L		1.00	99.3	85-115	1.62	20	

Batch B506027 - General Prep - Wet Chem

Blank (B506027-BLK1)					Prepared & Analyzed: 06/03/15					
Sulfate	ND	10.0	mg/L							

Green Analytical Laboratories

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B506027 - General Prep - Wet Chem

LCS (B506027-BS1)				Prepared & Analyzed: 06/03/15						
Sulfate	47.4	10.0	mg/L	50.0		94.7	85-115			

LCS Dup (B506027-BSD1)				Prepared & Analyzed: 06/03/15						
Sulfate	47.7	10.0	mg/L	50.0		95.4	85-115	0.726	20	

Batch B506029 - General Prep - Wet Chem

Blank (B506029-BLK1)				Prepared & Analyzed: 06/02/15						
TDS	ND	10.0	mg/L							

Duplicate (B506029-DUP1)				Source: 1505214-01 Prepared & Analyzed: 06/02/15						
TDS	305	10.0	mg/L		295			3.33	20	

Reference (B506029-SRM1)				Prepared & Analyzed: 06/02/15						
TDS	560	10.0	mg/L	590		94.9	85-115			

Batch B506033 - General Prep - Wet Chem

Blank (B506033-BLK1)				Prepared & Analyzed: 06/03/15						
Nitrate/Nitrite as N	ND	0.020	mg/L							

LCS (B506033-BS1)				Prepared & Analyzed: 06/03/15						
Nitrate/Nitrite as N	1.09	0.020	mg/L	1.00		109	90-110			

LCS Dup (B506033-BSD1)				Prepared & Analyzed: 06/03/15						
Nitrate/Nitrite as N	1.05	0.020	mg/L	1.00		105	90-110	3.74	20	

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506037 - General Prep - Wet Chem

Blank (B506037-BLK1)										
Prepared & Analyzed: 06/03/15										
Alkalinity, Total	ND	10.0	mg/L							
LCS (B506037-BS1)										
Prepared & Analyzed: 06/03/15										
Alkalinity, Total	92.0	10.0	mg/L	100		92.0	85-115			
LCS Dup (B506037-BSD1)										
Prepared & Analyzed: 06/03/15										
Alkalinity, Total	98.0	10.0	mg/L	100		98.0	85-115	6.32	20	

Batch B506062 - General Prep - Wet Chem

Blank (B506062-BLK1)										
Prepared & Analyzed: 06/05/15										
Chloride	ND	10.0	mg/L							
LCS (B506062-BS1)										
Prepared & Analyzed: 06/05/15										
Chloride	108	10.0	mg/L	100		108	85-115			
LCS Dup (B506062-BSD1)										
Prepared & Analyzed: 06/05/15										
Chloride	105	10.0	mg/L	100		105	85-115	2.82	20	

Batch B506104 - General Prep - Wet Chem

Blank (B506104-BLK1)										
Prepared & Analyzed: 06/09/15										
Bromide	ND	0.100	mg/L							
LCS (B506104-BS1)										
Prepared & Analyzed: 06/09/15										
Bromide	0.574	0.100	mg/L	0.600		95.7	85-115			

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B506104 - General Prep - Wet Chem

LCS Dup (B506104-BSD1)

Prepared & Analyzed: 06/09/15

Bromide	0.602	0.100	mg/L	0.600		100	85-115	4.74	20	
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Green Analytical Laboratories

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B506006 - Dissolved Metals, E200.7/E200.8

Blank (B506006-BLK1)

Prepared: 06/01/15 Analyzed: 06/02/15

Calcium	ND	0.020	mg/L							
Iron	ND	0.050	mg/L							
Magnesium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							

LCS (B506006-BS1)

Prepared: 06/01/15 Analyzed: 06/02/15

Calcium	4.65	0.020	mg/L	5.00		93.0	85-115			
Iron	4.75	0.050	mg/L	5.00		95.1	85-115			
Magnesium	24.6	0.100	mg/L	25.0		98.3	85-115			
Potassium	9.60	1.00	mg/L	10.0		96.0	85-115			
Sodium	7.58	1.00	mg/L	8.10		93.6	85-115			

LCS Dup (B506006-BSD1)

Prepared: 06/01/15 Analyzed: 06/02/15

Calcium	4.74	0.020	mg/L	5.00		94.8	85-115	1.90	20	
Iron	4.86	0.050	mg/L	5.00		97.2	85-115	2.15	20	
Magnesium	25.1	0.100	mg/L	25.0		100	85-115	2.06	20	
Potassium	9.80	1.00	mg/L	10.0		98.0	85-115	2.06	20	
Sodium	7.71	1.00	mg/L	8.10		95.2	85-115	1.67	20	

Green Analytical Laboratories

Debbie Zufelt

Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: [none] Project Manager: Devin Hencmann	Reported: 06/11/15 16:11
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Notes and Definitions

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
*Results reported on as received basis unless designated as dry.
- RPD Relative Percent Difference
- LCS Laboratory Control Sample (Blank Spike)
- RL Report Limit
- MDL Method Detection Limit

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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GREEN Analytical Laboratories

CHAIN OF CUSTODY RECORD

NOTES:

- 1) Ensure proper container packaging.
- 2) Ship samples promptly following collection.
- 3) Designate Sample Reject Disposition.

Table 1. - Matrix Type
 1 = Surface Water, 2 = Ground Water
 3 = Soil/Sediment, 4 = Prod. W., 5 = Oil
 6 = Waste, 7 = Other (Specify) _____

FOR GAL USE ONLY
 GAL JOB #
1505.214

Client: CT Environmental
 Contact: Devin Hennemann
 Address: 2243 Main Ave #3
 Phone Number: 970-385-1096
 Email: Dhennemann@hnc.com

Project Name: Ariveta Springs
 Sample Signatures: [Signature]

Lab Name: Green Analytical Laboratories (970) 247-4220 FAX (970) 247-4227
 Address: 75 Suttle Street, Durango, CO 81303 www.greenanalytical.com

Sample ID	Date	Time	Collected by: (Init.)	Miscellaneous			Preservative(s)				Analyses Required	Comments		
				Matrix Type From Table 1	No. of Containers	Sample Filtered? Y/N	Unpreserved (Ice Only)	HNO3	HCL	H2SO4			NAOH	Other (Specify)
1. Section 14 (Devin) Spring	5/26/15	1323	DH	1	3	N	<input checked="" type="checkbox"/>						#9 15.20c on ice	
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														
Relinquished by: <u>[Signature]</u>			Date:	Time:	Received by:	Date:	Time:	Received by: <u>Devin Hennemann</u>					Date:	Time:
Relinquished by:			Date:	Time:	Received by:	Date:	Time:	Received by:					Date:	Time:
Relinquished by:			Date:	Time:	Received by:	Date:	Time:	Received by:					Date:	Time:

* Sample Reject: [] Return [] Dispose [] Store (30 Days)



75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

17 June 2015

Devin Hencmann
LT Environmental
2243 Main Ave, Suite 3
Durango, CO 81301
RE: Archuleta Springs

Enclosed are the results of analyses for samples received by the laboratory on 06/03/15 16:00.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Debbie Zufelt".

Debbie Zufelt
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water



LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Grassy Spring	1506025-01	Water	06/03/15 12:15	06/03/15 16:00
Watson Well Spring	1506025-02	Water	06/03/15 12:45	06/03/15 16:00
Crain Spring	1506025-03	Water	06/03/15 14:00	06/03/15 16:00

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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Grassy Spring

1506025-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	290	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Total*	290	10.0		mg/L	5	06/10/15	2320 B		JLM
Bromide	0.593	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	120	100	50.0	mg/L	10	06/12/15	4500-Cl- C		LLG
Conductivity*	703	10.0		uS/cm	1	06/05/15	2510 B		MJV
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/12/15	4500-F- C		ABP
Nitrate/Nitrite as N*	0.365	0.020	0.010	mg/L	1	06/12/15	EPA353.2		KLJ
pH*	7.10			pH Units	1	06/05/15	EPA150.1		MJV
TDS*	520	10.0		mg/L	1	06/09/15	EPA160.1		ABP
Sulfate	166	20.0	3.36	mg/L	2	06/13/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	99.1	0.020	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Magnesium*	29.8	0.100	0.032	mg/L	1	06/08/15	EPA200.7		JGS
Potassium*	2.77	1.00	0.335	mg/L	1	06/08/15	EPA200.7		JGS
Sodium*	26.4	1.00	0.305	mg/L	1	06/08/15	EPA200.7		JGS

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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Watson Well Spring

1506025-02 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	340	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Total*	340	10.0		mg/L	5	06/10/15	2320 B		JLM
Bromide	0.667	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	<10.0	10.0	5.00	mg/L	1	06/12/15	4500-Cl- C		LLG
Conductivity*	696	10.0		uS/cm	1	06/05/15	2510 B		MJV
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/12/15	4500-F- C		ABP
Nitrate/Nitrite as N*	7.69	0.200	0.101	mg/L	10	06/12/15	EPA353.2		KLJ
pH*	7.22			pH Units	1	06/05/15	EPA150.1		MJV
TDS*	495	10.0		mg/L	1	06/09/15	EPA160.1		ABP
Sulfate	85.6	10.0	1.68	mg/L	1	06/13/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	98.4	0.020	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Magnesium*	39.2	0.100	0.032	mg/L	1	06/08/15	EPA200.7		JGS
Potassium*	2.36	1.00	0.335	mg/L	1	06/08/15	EPA200.7		JGS
Sodium*	19.2	1.00	0.305	mg/L	1	06/08/15	EPA200.7		JGS

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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Crain Spring

1506025-03 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	250	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	5	06/10/15	2320 B		JLM
Alkalinity, Total*	250	10.0		mg/L	5	06/10/15	2320 B		JLM
Bromide	0.388	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	<20.0	20.0	10.0	mg/L	2	06/12/15	4500-Cl- C		LLG
Conductivity*	510	10.0		uS/cm	1	06/05/15	2510 B		MJV
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/12/15	4500-F- C		ABP
Nitrate/Nitrite as N*	0.089	0.020	0.010	mg/L	1	06/12/15	EPA353.2		KLJ
pH*	7.54			pH Units	1	06/05/15	EPA150.1		MJV
TDS*	370	10.0		mg/L	1	06/09/15	EPA160.1		ABP
Sulfate	96.0	20.0	3.36	mg/L	2	06/13/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	71.5	0.020	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Magnesium*	21.7	0.100	0.032	mg/L	1	06/08/15	EPA200.7		JGS
Potassium*	2.03	1.00	0.335	mg/L	1	06/08/15	EPA200.7		JGS
Sodium*	22.0	1.00	0.305	mg/L	1	06/08/15	EPA200.7		JGS

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506068 - General Prep - Wet Chem

Duplicate (B506068-DUP1)		Source: 1506025-01			Prepared & Analyzed: 06/05/15					
pH	7.16		pH Units		7.10			0.842	20	
Reference (B506068-SRM1)					Prepared & Analyzed: 06/05/15					
pH	8.99		pH Units		9.15		98.3	8142-102.14		

Batch B506073 - General Prep - Wet Chem

Duplicate (B506073-DUP1)		Source: 1506025-01			Prepared & Analyzed: 06/05/15					
Conductivity	703	10.0	uS/cm		703			0.00	20	
Reference (B506073-SRM1)					Prepared & Analyzed: 06/05/15					
Conductivity	561		uS/cm		520		108	90-110		

Batch B506101 - General Prep - Wet Chem

Blank (B506101-BLK1)					Prepared & Analyzed: 06/10/15					
Alkalinity, Total	ND	10.0	mg/L							
LCS (B506101-BS1)					Prepared & Analyzed: 06/10/15					
Alkalinity, Total	99.0	10.0	mg/L		100		99.0	85-115		
LCS Dup (B506101-BSD1)					Prepared & Analyzed: 06/10/15					
Alkalinity, Total	101	10.0	mg/L		100		101	85-115	2.00	20

Batch B506104 - General Prep - Wet Chem

Blank (B506104-BLK1)					Prepared & Analyzed: 06/09/15					
Bromide	ND	0.100	mg/L							

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506104 - General Prep - Wet Chem

LCS (B506104-BS1)				Prepared & Analyzed: 06/09/15						
Bromide	0.574	0.100	mg/L	0.600		95.7	85-115			
LCS Dup (B506104-BSD1)				Prepared & Analyzed: 06/09/15						
Bromide	0.602	0.100	mg/L	0.600		100	85-115	4.74	20	

Batch B506121 - General Prep - Wet Chem

Blank (B506121-BLK1)				Prepared & Analyzed: 06/12/15						
Fluoride	ND	0.250	mg/L							
LCS (B506121-BS1)				Prepared & Analyzed: 06/12/15						
Fluoride	0.949	0.250	mg/L	1.00		94.9	85-115			
LCS Dup (B506121-BSD1)				Prepared & Analyzed: 06/12/15						
Fluoride	0.920	0.250	mg/L	1.00		92.0	85-115	3.10	20	

Batch B506123 - General Prep - Wet Chem

Blank (B506123-BLK1)				Prepared & Analyzed: 06/09/15						
TDS	ND	10.0	mg/L							
Duplicate (B506123-DUP1)				Source: 1506025-01 Prepared & Analyzed: 06/09/15						
TDS	520	10.0	mg/L		520			0.00	20	
Reference (B506123-SRM1)				Prepared & Analyzed: 06/09/15						
TDS	620	10.0	mg/L	590		105	85-115			

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506127 - General Prep - Wet Chem

Blank (B506127-BLK1) Prepared & Analyzed: 06/12/15										
Chloride	ND	10.0	mg/L							
LCS (B506127-BS1) Prepared & Analyzed: 06/12/15										
Chloride	93.0	10.0	mg/L	100		93.0	85-115			
LCS Dup (B506127-BSD1) Prepared & Analyzed: 06/12/15										
Chloride	104	10.0	mg/L	100		104	85-115	11.2	20	

Batch B506140 - General Prep - Wet Chem

Blank (B506140-BLK1) Prepared & Analyzed: 06/12/15										
Nitrate/Nitrite as N	ND	0.020	mg/L							
LCS (B506140-BS1) Prepared & Analyzed: 06/12/15										
Nitrate/Nitrite as N	1.04	0.020	mg/L	1.00		104	90-110			
LCS Dup (B506140-BSD1) Prepared & Analyzed: 06/12/15										
Nitrate/Nitrite as N	1.03	0.020	mg/L	1.00		103	90-110	0.966	20	

Batch B506141 - General Prep - Wet Chem

Blank (B506141-BLK1) Prepared & Analyzed: 06/13/15										
Sulfate	ND	10.0	mg/L							
LCS (B506141-BS1) Prepared & Analyzed: 06/13/15										
Sulfate	53.4	10.0	mg/L	50.0		107	85-115			

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506141 - General Prep - Wet Chem

LCS Dup (B506141-BSD1)

Prepared & Analyzed: 06/13/15

Sulfate	52.4	10.0	mg/L	50.0		105	85-115	1.89	20	
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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506064 - Dissolved Metals, E200.7/E200.8

Blank (B506064-BLK1)

Prepared & Analyzed: 06/08/15

Calcium	ND	0.020	mg/L							
Iron	ND	0.050	mg/L							
Magnesium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							

LCS (B506064-BS1)

Prepared & Analyzed: 06/08/15

Calcium	4.84	0.020	mg/L	5.00		96.8	85-115			
Iron	4.96	0.050	mg/L	5.00		99.2	85-115			
Magnesium	25.5	0.100	mg/L	25.0		102	85-115			
Potassium	10.2	1.00	mg/L	10.0		102	85-115			
Sodium	7.89	1.00	mg/L	8.10		97.4	85-115			

LCS Dup (B506064-BSD1)

Prepared & Analyzed: 06/08/15

Calcium	4.81	0.020	mg/L	5.00		96.3	85-115	0.497	20	
Iron	4.94	0.050	mg/L	5.00		98.7	85-115	0.468	20	
Magnesium	25.4	0.100	mg/L	25.0		101	85-115	0.611	20	
Potassium	9.96	1.00	mg/L	10.0		99.6	85-115	2.05	20	
Sodium	7.82	1.00	mg/L	8.10		96.6	85-115	0.800	20	

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Springs Project Manager: Devin Hencmann	Reported: 06/17/15 09:21
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Notes and Definitions

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
*Results reported on as received basis unless designated as dry.
- RPD Relative Percent Difference
- LCS Laboratory Control Sample (Blank Spike)
- RL Report Limit
- MDL Method Detection Limit

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Analytical Laboratories

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: LT Environmental

NOTES:

1) Ensure proper container packaging.

2) Ship samples promptly following collection.

3) Designate Sample Reject Disposition.

PO# 019115001

Table 1. - Matrix Type
 1 = Surface Water, 2 = Ground Water
 3 = Soil/Sediment, 4 = Prod. W., 5 = Oil
 6 = Waste, 7 = Other (Specify)

FOR GAL USE ONLY
 GAL JOB #
1506-025

Contact: Devin Hencmann

Address: 2245 main Ave Suite 8

Durango CO, 81301

Phone Number: 970-385-1096

Email: dhencmann@henv.com

Project Name: Archuleta Springs

Samplers Signature: [Signature]

Lab Name: Green Analytical Laboratories

(970) 247-4220

FAX (970) 247-4227

Analyses Required

Address: 75 Suttle Street, Durango, CO 81303

www.greenanalytical.com

Sample ID	Date	Time	Collected by: (Init.)	Matrix Type From Table 1	No. of Containers	Sample Filtered ? Y/N	Unpreserved (Ice Only)	Preservative(s)					Other (Specify)	Analyses Required	Comments
								HNO3	HCL	H2SO4	NAOH				
1. <u>Grassy Spring</u>	<u>6/3/15</u>	<u>1215</u>	<u>DN</u>	<u>1</u>	<u>3</u>	<u>N</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>See Attached</u>	
2. <u>Watson Wells Spring</u>	<u>6/3/15</u>	<u>1245</u>	<u>DN</u>	<u>1</u>	<u>3</u>	<u>N</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
3. <u>Grain Spring</u>	<u>6/3/15</u>	<u>1400</u>	<u>DN</u>	<u>1</u>	<u>3</u>	<u>N</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
4.															
5.															
6.															
7.															
8.															
9.															
10.															

on ice
14.2°C
DN

Relinquished by: [Signature]

Date: 6/3/15

Time: 1600

Received by: [Signature]

Date: 6-3-15

Time: 16:00

Relinquished by: [Signature]

Date: 6/3/15

Time: 1600

Received by: [Signature]

Date: 6-3-15

Time: 16:00

Relinquished by: [Signature]

Date: 6/3/15

Time: 1600

Received by: [Signature]

Date: 6-3-15

Time: 16:00

* Sample Reject: [] Return [] Dispose [] Store (30 Days)



75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

24 June 2015

Devin Hencmann
LT Environmental
2243 Main Ave, Suite 3
Durango, CO 81301
RE: Archuletta Springs

Enclosed are the results of analyses for samples received by the laboratory on 06/04/15 15:54.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Debbie Zufelt".

Debbie Zufelt
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water



LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Spring Project Manager: Devin Hencmann	Reported: 06/24/15 14:01
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Munger Spring 1	1506046-01	Water	06/04/15 10:45	06/04/15 15:54
Munger Spring 2	1506046-02	Water	06/04/15 11:15	06/04/15 15:54
Munger Spring 4	1506046-03	Water	06/04/15 12:00	06/04/15 15:54
Vance Spring 1	1506046-04	Water	06/04/15 14:15	06/04/15 15:54

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Spring Project Manager: Devin Hencmann	Reported: 06/24/15 14:01
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Munger Spring 1

1506046-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	155	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Total*	155	10.0		mg/L	5	06/12/15	2320 B		JLM
Bromide	0.323	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	106	20.0	10.0	mg/L	2	06/17/15	4500-Cl- C		LLG
Conductivity*	544	10.0		uS/cm	1	06/05/15	2510 B		MJV
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/12/15	4500-F- C		ABP
Nitrate/Nitrite as N*	0.333	0.020	0.010	mg/L	1	06/23/15	EPA353.2		KLJ
pH*	6.93			pH Units	1	06/05/15	EPA150.1		MJV
TDS*	370	10.0		mg/L	1	06/11/15	EPA160.1		ABP
Sulfate	28.7	10.0	1.68	mg/L	1	06/15/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	78.1	0.020	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Magnesium*	17.0	0.100	0.032	mg/L	1	06/08/15	EPA200.7		JGS
Potassium*	2.56	1.00	0.335	mg/L	1	06/08/15	EPA200.7		JGS
Sodium*	22.0	1.00	0.305	mg/L	1	06/08/15	EPA200.7	M5	JGS

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Munger Spring 2

1506046-02 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	150	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Total*	150	10.0		mg/L	5	06/12/15	2320 B		JLM
Bromide	<1.00	1.00	0.730	mg/L	10	06/09/15	4500-Br- B		ABP
Chloride*	34.0	20.0	10.0	mg/L	2	06/17/15	4500-Cl- C		LLG
Conductivity*	328	10.0		uS/cm	1	06/05/15	2510 B		MJV
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/12/15	4500-F- C		ABP
Nitrate/Nitrite as N*	<0.020	0.020	0.010	mg/L	1	06/23/15	EPA353.2		KLJ
pH*	6.75			pH Units	1	06/05/15	EPA150.1		MJV
TDS*	250	10.0		mg/L	1	06/11/15	EPA160.1		ABP
Sulfate	13.2	10.0	1.68	mg/L	1	06/15/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	42.8	0.020	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Iron*	0.063	0.050	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Magnesium*	8.07	0.100	0.032	mg/L	1	06/08/15	EPA200.7		JGS
Potassium*	2.94	1.00	0.335	mg/L	1	06/08/15	EPA200.7		JGS
Sodium*	18.7	1.00	0.305	mg/L	1	06/08/15	EPA200.7		JGS

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Munger Spring 4

1506046-03 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	260	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Total*	260	10.0		mg/L	5	06/12/15	2320 B		JLM
Bromide	0.509	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	<10.0	10.0	5.00	mg/L	1	06/17/15	4500-Cl- C		LLG
Conductivity*	419	10.0		uS/cm	1	06/05/15	2510 B		MJV
Fluoride*	0.401	0.250	0.0550	mg/L	1	06/12/15	4500-F- C		ABP
Nitrate/Nitrite as N*	0.283	0.020	0.010	mg/L	1	06/23/15	EPA353.2		KLJ
pH*	7.38			pH Units	1	06/05/15	EPA150.1		MJV
TDS*	320	10.0		mg/L	1	06/11/15	EPA160.1		ABP
Sulfate	<10.0	10.0	1.68	mg/L	1	06/15/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	78.2	0.020	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Magnesium*	11.1	0.100	0.032	mg/L	1	06/08/15	EPA200.7		JGS
Potassium*	1.67	1.00	0.335	mg/L	1	06/08/15	EPA200.7		JGS
Sodium*	12.5	1.00	0.305	mg/L	1	06/08/15	EPA200.7		JGS

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Vance Spring 1

1506046-04 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	170	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Carbonate*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	5	06/12/15	2320 B		JLM
Alkalinity, Total*	170	10.0		mg/L	5	06/12/15	2320 B		JLM
Bromide	0.156	0.100	0.0730	mg/L	1	06/09/15	4500-Br- B		ABP
Chloride*	<10.0	10.0	5.00	mg/L	1	06/17/15	4500-Cl- C		LLG
Conductivity*	291	10.0		uS/cm	1	06/05/15	2510 B		MJV
Fluoride*	<0.250	0.250	0.0550	mg/L	1	06/12/15	4500-F- C		ABP
Nitrate/Nitrite as N*	0.071	0.020	0.010	mg/L	1	06/23/15	EPA353.2		KLJ
pH*	7.56			pH Units	1	06/05/15	EPA150.1		MJV
TDS*	220	10.0		mg/L	1	06/11/15	EPA160.1		ABP
Sulfate	16.9	10.0	1.68	mg/L	1	06/15/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	44.7	0.020	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Iron*	0.095	0.050	0.003	mg/L	1	06/08/15	EPA200.7		JGS
Magnesium*	5.59	0.100	0.032	mg/L	1	06/08/15	EPA200.7		JGS
Potassium*	8.48	1.00	0.335	mg/L	1	06/08/15	EPA200.7		JGS
Sodium*	13.4	1.00	0.305	mg/L	1	06/08/15	EPA200.7		JGS

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Spring Project Manager: Devin Hencmann	Reported: 06/24/15 14:01
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506068 - General Prep - Wet Chem

Duplicate (B506068-DUP2)		Source: 1506035-01			Prepared & Analyzed: 06/05/15					
pH	7.84		pH Units		7.78			0.768	20	
Reference (B506068-SRM1)					Prepared & Analyzed: 06/05/15					
pH	8.99		pH Units	9.15		98.3	8142-102.14			

Batch B506073 - General Prep - Wet Chem

Duplicate (B506073-DUP2)		Source: 1506044-01			Prepared & Analyzed: 06/05/15					
Conductivity	1900	10.0	uS/cm		1890			0.158	20	
Reference (B506073-SRM1)					Prepared & Analyzed: 06/05/15					
Conductivity	561		uS/cm	520		108	90-110			

Batch B506104 - General Prep - Wet Chem

Blank (B506104-BLK1)					Prepared & Analyzed: 06/09/15					
Bromide	ND	0.100	mg/L							
LCS (B506104-BS1)					Prepared & Analyzed: 06/09/15					
Bromide	0.574	0.100	mg/L	0.600		95.7	85-115			
LCS Dup (B506104-BSD1)					Prepared & Analyzed: 06/09/15					
Bromide	0.602	0.100	mg/L	0.600		100	85-115	4.74	20	

Batch B506121 - General Prep - Wet Chem

Blank (B506121-BLK1)					Prepared & Analyzed: 06/12/15					
Fluoride	ND	0.250	mg/L							

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Spring Project Manager: Devin Hencmann	Reported: 06/24/15 14:01
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506121 - General Prep - Wet Chem

LCS (B506121-BS1)				Prepared & Analyzed: 06/12/15						
Fluoride	0.949	0.250	mg/L	1.00		94.9	85-115			
LCS Dup (B506121-BSD1)				Prepared & Analyzed: 06/12/15						
Fluoride	0.920	0.250	mg/L	1.00		92.0	85-115	3.10	20	

Batch B506124 - General Prep - Wet Chem

Blank (B506124-BLK1)				Prepared & Analyzed: 06/11/15						
TDS	ND	10.0	mg/L							
Duplicate (B506124-DUP1)				Source: 1506046-01 Prepared & Analyzed: 06/11/15						
TDS	400	10.0	mg/L		370			7.79	20	
Reference (B506124-SRM1)				Prepared & Analyzed: 06/11/15						
TDS	585	10.0	mg/L	590		99.2	85-115			

Batch B506128 - General Prep - Wet Chem

Blank (B506128-BLK1)				Prepared & Analyzed: 06/12/15						
Alkalinity, Total	ND	10.0	mg/L							
LCS (B506128-BS1)				Prepared & Analyzed: 06/12/15						
Alkalinity, Total	102	10.0	mg/L	100		102	85-115			
LCS Dup (B506128-BSD1)				Prepared & Analyzed: 06/12/15						
Alkalinity, Total	105	10.0	mg/L	100		105	85-115	2.90	20	

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Spring Project Manager: Devin Hencmann	Reported: 06/24/15 14:01
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506131 - General Prep - Wet Chem

Blank (B506131-BLK1)										
Prepared & Analyzed: 06/12/15										
Fluoride	ND	0.250	mg/L							
LCS (B506131-BS1)										
Prepared & Analyzed: 06/12/15										
Fluoride	0.959	0.250	mg/L	1.00		95.9	85-115			
LCS Dup (B506131-BSD1)										
Prepared & Analyzed: 06/12/15										
Fluoride	0.968	0.250	mg/L	1.00		96.8	85-115	0.934	20	

Batch B506153 - General Prep - Wet Chem

Blank (B506153-BLK1)										
Prepared & Analyzed: 06/15/15										
Sulfate	ND	10.0	mg/L							
LCS (B506153-BS1)										
Prepared & Analyzed: 06/15/15										
Sulfate	47.0	10.0	mg/L	50.0		94.0	85-115			
LCS Dup (B506153-BSD1)										
Prepared & Analyzed: 06/15/15										
Sulfate	49.0	10.0	mg/L	50.0		98.0	85-115	4.17	20	

Batch B506162 - General Prep - Wet Chem

Blank (B506162-BLK1)										
Prepared & Analyzed: 06/17/15										
Chloride	ND	10.0	mg/L							
LCS (B506162-BS1)										
Prepared & Analyzed: 06/17/15										
Chloride	104	10.0	mg/L	100		104	85-115			

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Spring Project Manager: Devin Hencmann	Reported: 06/24/15 14:01
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506162 - General Prep - Wet Chem

LCS Dup (B506162-BSD1)				Prepared & Analyzed: 06/17/15						
Chloride	106	10.0	mg/L	100		106	85-115	1.90	20	

Batch B506221 - General Prep - Wet Chem

Blank (B506221-BLK1)				Prepared: 06/22/15 Analyzed: 06/23/15						
Nitrate/Nitrite as N	ND	0.020	mg/L							

LCS (B506221-BS1)				Prepared: 06/22/15 Analyzed: 06/23/15						
Nitrate/Nitrite as N	1.00	0.020	mg/L	1.00		100	90-110			

LCS Dup (B506221-BSD1)				Prepared: 06/22/15 Analyzed: 06/23/15						
Nitrate/Nitrite as N	1.06	0.020	mg/L	1.00		106	90-110	5.83	20	

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuleta Springs Project Name / Number: Archuleta Spring Project Manager: Devin Hencmann	Reported: 06/24/15 14:01
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Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B506065 - Dissolved Metals, E200.7/E200.8

Blank (B506065-BLK1)

Prepared & Analyzed: 06/08/15

Calcium	ND	0.020	mg/L							
Iron	ND	0.050	mg/L							
Magnesium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							

LCS (B506065-BS1)

Prepared & Analyzed: 06/08/15

Calcium	4.81	0.020	mg/L	5.00		96.3	85-115			
Iron	4.93	0.050	mg/L	5.00		98.6	85-115			
Magnesium	25.4	0.100	mg/L	25.0		102	85-115			
Potassium	9.92	1.00	mg/L	10.0		99.2	85-115			
Sodium	7.84	1.00	mg/L	8.10		96.8	85-115			

LCS Dup (B506065-BSD1)

Prepared & Analyzed: 06/08/15

Calcium	4.79	0.020	mg/L	5.00		95.7	85-115	0.547	20	
Iron	4.93	0.050	mg/L	5.00		98.6	85-115	0.0522	20	
Magnesium	25.2	0.100	mg/L	25.0		101	85-115	0.591	20	
Potassium	9.84	1.00	mg/L	10.0		98.4	85-115	0.777	20	
Sodium	7.78	1.00	mg/L	8.10		96.0	85-115	0.808	20	

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Notes and Definitions

- M5 Sample was chosen for matrix spike. Spike recovery did not meet laboratory acceptance criteria, possible matrix interference in sample.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
*Results reported on as received basis unless designated as dry.
- RPD Relative Percent Difference
- LCS Laboratory Control Sample (Blank Spike)
- RL Report Limit
- MDL Method Detection Limit

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Analytical Laboratories

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: LT Environmental, Inc.

Contact: Devin Henzmann

Address: 2243 Main #3

Durango, CO 81301

Phone Number: (970) 385-1046

Email: Dhenzmann@LTEnv.com

NOTES:

- 1) Ensure proper container packaging.
- 2) Ship samples promptly following collection.
- 3) Designate Sample Reject Disposition.

PO# 01915003

Project Name: Archuleta Spring

Table 1. - Matrix Type
 1 = Surface Water, 2 = Ground Water
 3 = Soil/Sediment, 4 = Prod. W., 5 = Oil
 6 = Waste, 7 = Other (Specify) _____

FOR GAL USE ONLY
 GAL JOB #
1506-046

Samplers Signature: _____

Lab Name: Green Analytical Laboratories

Address: 75 Suttle Street, Durango, CO 81303

(970) 247-4220 FAX (970) 247-4227
 www.greenanalytical.com

Analyses Required

#9

4.10c

Sample ID	Collection		Collected by: (Init.)	Miscellaneous				Preservative(s)				Comments
	Date	Time		Matrix Type From Table 1	No. of Containers	Sample Filtered? Y/N	Unpreserved (Ice Only)	HNO3	HCL	H2SO4	NAOH	
01 1. Munger Spring 1	6-4-15	1045	DN/mw	2	3	N						See Attached
02 2. Munger Spring 2		1115										
03 3. Munger Spring 4		1200										
04 4. Vance Meadow Spring		1345										Res D.H.
04 5. Vance Spring 1		1415										
6.												
7.												
8.												
9.												
10.												
Relinquished by:		Date: <u>6-4-15</u>		Time: <u>1554</u>		Received by: <u>[Signature]</u>		Date: <u>6-4-15</u>		Time: <u>1554</u>		
Relinquished by:		Date:		Time:		Received by:		Date:		Time:		
Relinquished by:		Date:		Time:		Received by:		Date:		Time:		

* Sample Reject: [] Return [] Dispose [] Store (30 Days)



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Durango, CO 81303
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12 August 2015

Devin Hencmann
LT Environmental
2243 Main Ave, Suite 3
Durango, CO 81301
RE: Archuletta Springs

Enclosed are the results of analyses for samples received by the laboratory on 07/24/15 11:47.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Debbie Zufelt". The signature is written in a cursive, flowing style.

Debbie Zufelt
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water



LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 08/12/15 12:16
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Spring 3424	1507250-01	Water	07/24/15 09:40	07/24/15 11:47

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Debbie Zufelt, Reports Manager

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 08/12/15 12:16
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Spring 3424

1507250-01 (Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate*	250	10.0		mg/L	1	08/05/15	2320 B		LLG
Alkalinity, Carbonate*	<10.0	10.0		mg/L	1	08/05/15	2320 B		LLG
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	1	08/05/15	2320 B		LLG
Alkalinity, Total*	250	10.0		mg/L	1	08/05/15	2320 B		LLG
Bromide	0.231	0.100	0.0730	mg/L	1	07/25/15	4500-Br- B	M5	ABP
Chloride*	<10.0	10.0	5.00	mg/L	1	08/08/15	4500-Cl- C		LLG
Conductivity*	935	10.0		uS/cm	1	07/24/15	2510 B		MAJ
Fluoride*	0.306	0.250	0.0550	mg/L	1	07/28/15	4500-F- C		ABP
Nitrate/Nitrite as N*	0.069	0.020	0.010	mg/L	1	08/06/15	EPA353.2		KLJ
pH*	6.80			pH Units	1	07/24/15	EPA150.1		MAJ
TDS*	655	10.0		mg/L	1	07/27/15	EPA160.1		ABP
Sulfate	270	50.0	8.40	mg/L	5	07/29/15	4500-SO42- E		ABP

Dissolved Metals by ICP

Calcium*	124	0.020	0.003	mg/L	1	07/29/15	EPA200.7		JGS
Iron*	<0.050	0.050	0.003	mg/L	1	07/29/15	EPA200.7		JGS
Magnesium*	53.0	0.100	0.032	mg/L	1	07/29/15	EPA200.7		JGS
Potassium*	2.19	1.00	0.335	mg/L	1	07/29/15	EPA200.7		JGS
Sodium*	24.4	1.00	0.305	mg/L	1	07/29/15	EPA200.7		JGS

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 08/12/15 12:16
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B507224 - General Prep - Wet Chem

Blank (B507224-BLK1) Prepared & Analyzed: 07/25/15										
Bromide	ND	0.100	mg/L							
LCS (B507224-BS1) Prepared & Analyzed: 07/25/15										
Bromide	0.598	0.100	mg/L	0.600		99.6	85-115			
LCS Dup (B507224-BSD1) Prepared & Analyzed: 07/25/15										
Bromide	0.607	0.100	mg/L	0.600		101	85-115	1.53	20	

Batch B507236 - General Prep - Wet Chem

Duplicate (B507236-DUP1) Source: 1507232-01 Prepared & Analyzed: 07/24/15										
pH	7.85		pH Units		7.86			0.127	20	
Reference (B507236-SRM1) Prepared & Analyzed: 07/24/15										
pH	8.93		pH Units	9.12		97.9	7.807-102.19			

Batch B507237 - General Prep - Wet Chem

Duplicate (B507237-DUP1) Source: 1507232-01 Prepared & Analyzed: 07/24/15										
Conductivity	348	10.0	uS/cm		351			0.858	20	
Reference (B507237-SRM1) Prepared & Analyzed: 07/24/15										
Conductivity	616		uS/cm	596		103	90-110			

Batch B507248 - General Prep - Wet Chem

Blank (B507248-BLK1) Prepared & Analyzed: 07/28/15										
Fluoride	ND	0.250	mg/L							

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 08/12/15 12:16
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B507248 - General Prep - Wet Chem

LCS (B507248-BS1)				Prepared & Analyzed: 07/28/15						
Fluoride	0.976	0.250	mg/L	1.00		97.6	85-115			

LCS Dup (B507248-BSD1)				Prepared & Analyzed: 07/28/15						
Fluoride	0.929	0.250	mg/L	1.00		92.9	85-115	4.93	20	

Batch B507258 - General Prep - Wet Chem

Blank (B507258-BLK1)				Prepared & Analyzed: 07/27/15						
TDS	ND	10.0	mg/L							

Duplicate (B507258-DUP1)				Source: 1507210-01 Prepared & Analyzed: 07/27/15						
TDS	445	10.0	mg/L		450			1.12	20	

Reference (B507258-SRM1)				Prepared & Analyzed: 07/27/15						
TDS	580	10.0	mg/L	590		98.3	85-115			

Batch B507262 - General Prep - Wet Chem

Blank (B507262-BLK1)				Prepared & Analyzed: 07/29/15						
Sulfate	ND	10.0	mg/L							

LCS (B507262-BS1)				Prepared & Analyzed: 07/29/15						
Sulfate	50.1	10.0	mg/L	50.0		100	85-115			

LCS Dup (B507262-BSD1)				Prepared & Analyzed: 07/29/15						
Sulfate	47.0	10.0	mg/L	50.0		94.0	85-115	6.39	20	

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LT Environmental 2243 Main Ave, Suite 3 Durango CO, 81301	Project: Archuletta Springs Project Name / Number: Archuletta Springs Project Manager: Devin Hencmann	Reported: 08/12/15 12:16
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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B508036 - General Prep - Wet Chem

Blank (B508036-BLK1)										
Prepared & Analyzed: 08/05/15										
Alkalinity, Total	ND	10.0	mg/L							
LCS (B508036-BS1)										
Prepared & Analyzed: 08/05/15										
Alkalinity, Total	103	10.0	mg/L	100		103	85-115			
LCS Dup (B508036-BSD1)										
Prepared & Analyzed: 08/05/15										
Alkalinity, Total	99.0	10.0	mg/L	100		99.0	85-115	3.96	20	

Batch B508048 - General Prep - Wet Chem

Blank (B508048-BLK1)										
Prepared & Analyzed: 08/06/15										
Nitrate/Nitrite as N	ND	0.020	mg/L							
LCS (B508048-BS1)										
Prepared & Analyzed: 08/06/15										
Nitrate/Nitrite as N	1.02	0.020	mg/L	1.00		102	90-110			
LCS Dup (B508048-BSD1)										
Prepared & Analyzed: 08/06/15										
Nitrate/Nitrite as N	1.00	0.020	mg/L	1.00		100	90-110	1.98	20	

Batch B508071 - General Prep - Wet Chem

Blank (B508071-BLK1)										
Prepared & Analyzed: 08/08/15										
Chloride	ND	10.0	mg/L							
LCS (B508071-BS1)										
Prepared & Analyzed: 08/08/15										
Chloride	107	10.0	mg/L	100		107	85-115			

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General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B508071 - General Prep - Wet Chem

LCS Dup (B508071-BSD1)

Prepared & Analyzed: 08/08/15

Chloride	105	10.0	mg/L	100		105	85-115	1.89	20	
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Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B507228 - Dissolved Metals, E200.7/E200.8

Blank (B507228-BLK1)

Prepared: 07/27/15 Analyzed: 07/29/15

Calcium	ND	0.020	mg/L							
Iron	ND	0.050	mg/L							
Magnesium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							

LCS (B507228-BS1)

Prepared: 07/27/15 Analyzed: 07/29/15

Calcium	4.62	0.020	mg/L	5.00		92.4	85-115			
Iron	4.75	0.050	mg/L	5.00		95.0	85-115			
Magnesium	24.7	0.100	mg/L	25.0		98.9	85-115			
Potassium	10.2	1.00	mg/L	10.0		102	85-115			
Sodium	7.66	1.00	mg/L	8.10		94.6	85-115			

LCS Dup (B507228-BSD1)

Prepared: 07/27/15 Analyzed: 07/29/15

Calcium	4.60	0.020	mg/L	5.00		92.0	85-115	0.408	20	
Iron	4.73	0.050	mg/L	5.00		94.6	85-115	0.368	20	
Magnesium	24.6	0.100	mg/L	25.0		98.5	85-115	0.440	20	
Potassium	9.79	1.00	mg/L	10.0		97.9	85-115	4.02	20	
Sodium	7.60	1.00	mg/L	8.10		93.9	85-115	0.754	20	

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Notes and Definitions

- M5 Sample was chosen for matrix spike. Spike recovery did not meet laboratory acceptance criteria, possible matrix interference in sample.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
*Results reported on as received basis unless designated as dry.
- RPD Relative Percent Difference
- LCS Laboratory Control Sample (Blank Spike)
- RL Report Limit
- MDL Method Detection Limit

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