June 3, 2005

Ms. Debbie Baldwin
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, Colorado 80203

RE: Second Methane Seep Survey and Natural Spring Survey
Bondad, Colorado

Dear Ms. Baldwin:

LT Environmental, Inc. (LTE) is pleased to provide the Colorado Oil and Gas Conservation Commission (COGCC) with this letter summarizing the results of the second methane seep survey and natural spring survey conducted at the Bondad Explosion Site (Site) located in Bondad, Colorado during the week of April 18, 2005.

BACKGROUND

At the request of the COGCC, LTE was tasked to conduct an initial methane gas seep survey on the Site in February 2005. The initial methane seep survey was performed in response to an explosion of a residence located at 4034 US Highway 550 (Yoakum Residence). During the period from February 21 through February 24, 2005, LTE conducted soil gas survey activities in the project area extending radially outward approximately 3,000 feet in all directions from the Nick Spatter Bryce Farm #1 (NSBF #1) production well (Figure 1). The results of the initial soil gas survey are presented in the *Methane Seep Survey Report* (March 2005). Both the initial soil gas survey report and this report are available on the COGCC website at www.oil-gas.state.co.us.

SITE DESCRIPTION

The Site is located in Bondad, Colorado, approximately 20 miles to the south of Durango, Colorado (Figure 1). The Site is located approximately 0.25 miles north of the confluence of the Animas River to the west and the Florida River. The Site consists of several tracts of land covering more than 100 acres. The land use consists of residential properties, a fire station, US Highway 550, the Animas River, and the Florida River. The majority of land area is privately owned. Figure 1 shows the layout of the Site.

METHANE GAS SEEP SURVEY

Methodology

On April 19, 2005, LTE was on site to conduct a second methane gas seep survey of the Site. The scope of the survey was similar to the survey conducted at the Site during February 2005, however the methodology was slightly different. During the February 2005 survey, LTE frequently had to modify the measurement procedure, due to saturated ground conditions, to prevent water from entering the

field meter. When ground conditions were saturated, the slide hammer was used to bore a hole into the soil and a funnel was fitted over the open borehole at the ground surface. The four-gas meter was then able to measure gas escaping from the borehole, captured by the funnel, and transmitted into the four-gas meter. During the most recent soil gas survey, ground conditions were dry, making it possible to lower tubing into each borehole and collect gas measurements directly from the shallow surface soil approximately three feet below ground surface (bgs).

During this survey, LTE created a sampling grid to cover the mapping area systematically and to provide a means to delineate the extent of the gas seepage. The grid consisted of 93 squares, each measuring approximately 10,000 square feet in area. LTE collected a soil gas measurement at the corners of each square in the grid. Each location was recorded using a Trimble GeoXT® global positioning system (GPS). When methane was detected along the edges of the grid, additional measurements were collected outside of the grid to better define the extent of the seep area. LTE also collected methane measurements around the exterior of the three houses located to the east of the Yoakum residence and near the water wells associated with each of the three houses.

Soil Gas Survey Results

On April 19, 2005, LTE personnel advanced a total of 134 subsurface probes across the project area. Results of the most recent soil gas survey indicated that elevated methane gas was detected in an elliptically-shaped area centered over the NSBF#1 well and covering approximately 14 acres. Detected methane concentrations in the elliptically-shaped seep area ranged from 1,500 parts per million (ppm) (0.15% methane) to 1,000,000 ppm (100% methane).

Methane was detected at two locations along the floodplain of the Animas River beneath the sandstone bedrock at concentrations of 9,000 ppm (0.9% methane) and 90,000 ppm (9% methane). Methane was also detected at two locations near the Cain 31-2 coalbed methane (CBM) production well at concentrations of 2,500 ppm (2.5% methane) and 100,000 ppm (10% methane). Methane was detected near the Budhue water well at a concentration of 1,000,000 ppm (100% methane). Methane was not detected around the outside of the other two water wells which are associated the the Bennett and Grant Properties; however the ground around the wells and within each of the water wells contain elevated concentrations of methane.

Methane Seep Survey Comparison

The number of soil gas measurements collected during the February 2005 methane seep survey and the April 2005 methane seep survey were 372 and 134, respectively. Fewer measurements were necessary during the April 2005 survey because the previous survey had identified the major areas of concern. Also, the grid created for the April 2005 methane seep survey allowed LTE to conduct field activities more efficiently and systematically.

The results of the April 2005 soil gas survey were similar to the results of the February 2005 soil gas survey. The majority of methane was detected in an elliptically-shaped seep area similar to the seep area mapped in February 2005. Unlike the previous survey, methane was not detected in the farmer's field located to the south of the Yoakum property, nor was it detected around the outside of the Bennett water well. During the April 2005 soil gas survey, methane was detected along the floodplain

of the Animas River where methane had not been detected previously. The extent and concentrations of the seep area near the Cain 31-2 CBM production well were greater during the most recent survey than during the February 2005 survey.

In general, the concentrations of methane recorded during the most recent soil gas survey were slightly higher than the concentrations recorded during the February 2005 survey. The higher concentrations are most likely due to the methodology of the measurement process. Because of saturated ground conditions, the funnel method was used during the February 2005 survey to collect gas readings at or above the ground surface. Relatively dry ground conditions during the most recent survey allowed the tubing to be placed down each borehole to collect gas from approximately three feet bgs. The variance in concentrations observed between the two measurements is more likely related to measurement method as opposed to an increasing trend in gas seepage.

NATURAL SPRING SURVEY

Methodology

On April 20, 2005, LTE conducted a survey of natural springs in the project area. LTE searched for natural springs along the floodplains of both the Florida River and the Animas River. Where a natural spring was encountered, the location was recorded using a GPS. A water sample was then collected from the spring, placed on ice, and delivered with a completed chain-of-custody to Evergreen Analytical, Inc. of Wheat Ridge, Colorado. The water samples were submitted for analysis of dissolved methane, major cations (Sodium, Calcium, Magnesium, and Potassium), major anions (Chloride, Bromide, Carbonate, Bicarbonate, and Sulfate), and total dissolved solids (TDS). When dissolved methane gas was detected in a sample from the natural spring, an additional sample was submitted to Isotech Laboratories, Inc. of Champaign, Illinois for gas composition and isotopic analysis.

Natural Spring Survey Results

LTE did not observe any natural springs along the floodplain of the Florida River within the mapping area. LTE observed two natural springs along the floodplain of the Animas River directly west of the fire station building. The springs were located in close proximity to each other and stratigraphically below the sandstone bedrock based on observed surface geology. Water samples were collected from each of the springs and labeled Spring1 and Spring2. Photographs of the two natural springs are presented in Attachment 1.

Dissolved methane was detected in the water sample from Spring1 at a concentration of 0.0026 mg/L. Dissolved methane was not detected above laboratory detection limits in the water sample from Spring2. Therefore, gas composition analysis was not performed on the water sample from Spring2. Analytical results from the gas composition analysis of gas from water sample Spring1 indicated the presence of methane at a concentration of 0.0117%. Isotopic analysis was not performed on the water sample from Spring1 due to an insufficient quantity of methane in the sample. Methane gas was detected in the soil in close proximity to each of the natural springs identified. The natural spring water and gas analytical results are summarized in Table 1 and Table 2, respectively. The locations of

the natural springs are shown on Figures 1 and 2. The laboratory analytical reports are presented in Attachment 2.

CONCLUSIONS AND RECOMMENDATIONS

The extent of seep activity has remained relatively unchanged since the initial sampling event. Seep activity appears to be associated with the NSBF#1 well based on the current concentrations and extent of impact. Soil gas survey measurement protocols appear to have an effect on the reported concentration. LTE recommends the downhole measurement of gas concentrations over surface measurements, whenever possible.

LTE recommends continued monitoring of the methane seep at the Site as a safety precaution for the people living in the area. The grid mapping system will be used during future seep surveys in an effort to remain consistent and systematic in the field techniques. The next seep survey is proposed for June 15, 2005.

Based on the results of the most recent methane seep survey and the natural spring survey, it appears that an area of trapped methane gas is present beneath the sandstone layer. It is likely that the sandstone unit is acting as a vertical confining layer, forcing the methane gas to migrate horizontally towards the valley of the Animas River and northward to create the elliptically-shaped seepage plume. Methane was detected in one of the natural spring samples. The springs are located stratigraphically below the sandstone and the presence of methane in the water support the theory that the sandstone is acting as a partial barrier to methane seeping from the NSBF#1. The methane detected in the soil along the Animas River, and positioned stratigraphically below the sandstone bedrock, also supports the presence of a trapped gas source beneath the sandstone layer.

Conceptually, gas is migrating vertically using the NSBF#1 as the primary conduit. Varying permeability and well plugging efficiency allows for horizontal migration of seeping gas. The sandstone layer may also be acting as a trap of seeping methane gas. The increased radius of surface methane seepage is believed to be a result of trapped gas beneath the sandstone layer and the underlying weathered shale layers. Horizontal migration of methane gas below the sandstone allows for gas seeps to be detected along the Animas River valley wall. Surface water infiltration in the seep area captures dissolved methane as water percolates through the gravel and fractured sandstone layers. Varying layers of permeability in the shale induces horizontal migration of seeping water creating natural springs along the Animas River valley wall. The cross-section diagram presented on Figure 3 depicts a conceptual model of gas migration at the site.

Other conduits such as the Cain 31-2 and the water wells located at nearby residences and the firestation also appear to act as conduits for the vertical migration of methane gas. However, the gas migrating in the water wells appears to be derived from deeper impacted groundwater horizons as a result of the NSBF#1 seeping gas into a subsurface aquifer rather than the near-surface methane seep.

LTE is currently evaluating the results of a geophysical survey recently completed at the site to assist in the understanding of gas migration in the subsurface. Results of the survey will be presented under separate cover.

LTE recommends continued operation and maintenance (O&M) of the existing methane detection systems in the four houses and the fire station located within the project area. The monthly O&M will continue to be conducted by Standby Safety of Cortez, Colorado.

LTE appreciates the opportunity to provide environmental services to the COGCC. If you have any questions regarding this report or would like additional information, please contact us at (303) 433-9788.

Sincerely,

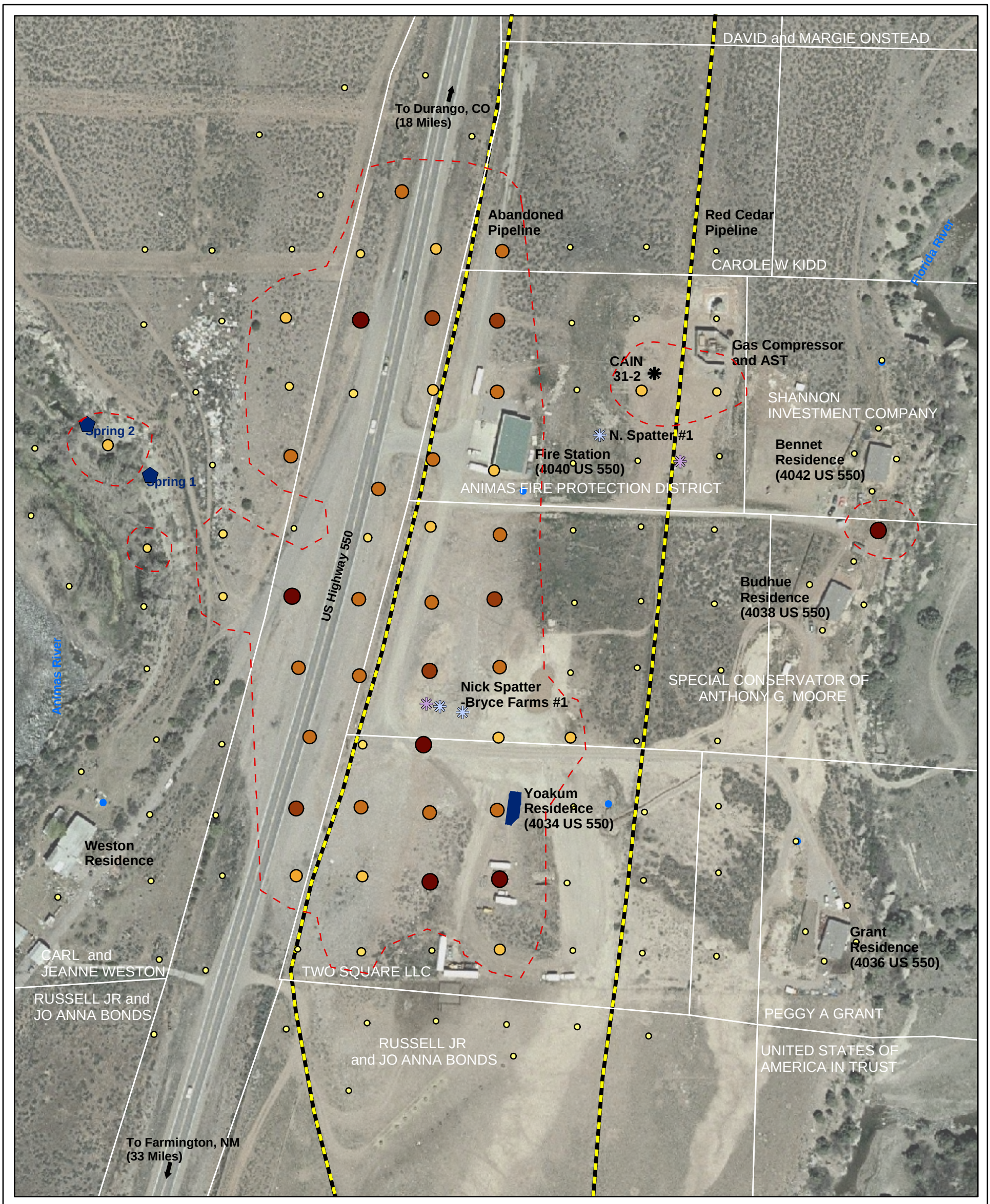
LT ENVIRONMENTAL, INC.

Kyle G. Siesser
Staff Geologist

John D. Peterson, P.G.
Project Manager

Attachments (2)

FIGURES



LEGEND

- Water Supply Well
- Gas Well
- Potential Former Oil and Gas Well
- Former Oil and Gas Well
- Natural Spring Location and Water Sample Location
- Yoakum Residence

Utilities

- Buried Gas Pipeline

Extent of Methane Seepage April 19, 2005

Landowner and Property Boundaries Labeled in White

Subsurface Methane Gas

- 0 - 25 ppm
- 25 ppm - 5%
- 5% - 15%
- 15% - 25%
- 25% - 50%
- 50% - 75%
- 75% - 100%

N

0 280

Feet

1 INCH = 140 FEET

FIGURE 1
SUBSURFACE METHANE MEASUREMENTS
APRIL 19, 2005
BONDAD GAS SEEP
BONDAD, CO

COLORADO OIL AND GAS CONSERVATION COMMISSION

OGCC050101 04/05

LEGEND

- Natural Spring Location and Water Sample Location
- Water Supply Well
- Potential Former Oil and Gas Well
- Former Oil and Gas Well
- Yoakum Residence

Utilities

- Buried Gas Pipeline

N

0 180

Feet

1 INCH = 90 FEET

FIGURE 2
NATURAL SPRINGS
APRIL 20, 2005
BONDAD GAS SEEP
BONDAD, CO

COLORADO OIL AND GAS CONSERVATION COMMISSION

OGCC050102 04/05

TABLES

TABLE 1
NATURAL SPRING WATER ANALYTICAL RESULTS

BONDAD GAS SEEP
BONDAD, COLORADO

Sample Name	Dissolved CH_4 (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	TDS (mg/L)	Anions (mg/L)			Cations (mg/L)			
					Chloride	Bromide	Sulfate	Calcium	Magnesium	Potassium	Sodium
Spring1	0.0026	255	<5.0	463	20.2	0.0600	134	78	29	2.4	21
Spring2	<0.00080	232	<5.0	462	22.6	0.0600	142	82	27	2.6	23

Notes:
CH_4 - methane
mg/L - milligrams per Liter
TDS - Total Dissolved Solids

TABLE 2
NATURAL SPRING GAS ANALYTICAL RESULTS

BONDAD GAS SEEP
BONDAD, COLORADO

Isotech Lab No.	Sample Name	Ar %	O_2 %	CO_2 %	N_2 %	CO %	C_1 %	C_2 %	C_2H_4 %	C_3 %	iC_4 %	nC_4 %	iC_5 %	nC_5 %	C_6+ %	Specific Gravity	BTU
82023	Spring1	1.08	14.59	2.11	82.21	0	0.0117	0	0	0	0	0	0	0	0	1.003	0

Notes:

Chemical analysis based on standards accurate to within 2%
Ar = argon
O_2 = oxygen
CO_2 = carbon dioxide
N_2 = nitrogen
CO = carbon monoxide
C_1 = methane
C_2 = ethane
C_2H_4 = ethylene
C_3 = propane
iC_4 = i-butane
nC_4 = n-butane
iC_5 = i-pentane
nC_5 = n-pentane
C_6+ = hexane and greater
BTU = british thermal units

ATTACHMENT 1

PHOTOGRAPHS

Photograph 1: Spring1, view east

Photograph 2: Spring2, view east

ATTACHMENT 2

LABORATORY ANALYTICAL REPORT

Evergreen Analytical Laboratory

May 05, 2005

John Peterson
LT Environmental
4400 West 46th Avenue
Denver, CO 80212

Lab Work Order: 05-2757
Client Project ID: OGCC0503.05

Dear John Peterson:

Enclosed are the analytical results and invoice for the samples shown in the Laboratory Work Order Summary.

The enclosed data for testing performed at Evergreen Analytical Laboratory (EAL) have been reviewed for quality assurance. A case narrative is included to describe any anomalies associated with the samples or data.

EAL will dispose of all samples one month from the date of this letter. If you want samples returned, please advise us by mail or fax as soon as possible.

A copy of this project report and supporting data will be retained for a period of five years unless we are otherwise advised by you. A document retrieval charge will apply.

Thank you for using the services of Evergreen Analytical. If you have any questions concerning the analytical data, please contact me. Please direct other questions to Client Services.

Sincerely,

Carl Smits
Technical Director of Chemical Analysis

01

WORK ORDER Summary Evergreen Analytical, Inc. 05-2757

Rpt To: John Peterson
LT Environmental
4400 West 46th Avenue
Denver, CO 80212
(303) 433-9788

Fax To: John Peterson **FX:** (303) 433-1432

4/21/05 5:16:36 PM

Client Project ID: OGCC0503.05

QC Level: LEVEL I

Comments:

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
05-2757-01A	Spring 1	Water	4/20/05 1105	4/21/05	TDS_W	Total Dissolved Solids (TDS)	☐	☐	5/05/05	4/27/05
05-2757-01B	Spring 1	Water	4/20/05 1105	4/21/05	MEEP_W *	RSK175M: Methane	☐	☐	4/26/05	5/04/05
05-2757-01C	Spring 1	Water	4/20/05 1105	4/21/05	200.7_T *	200.7 Total Metals	☐	☐	5/05/05	10/17/05
05-2757-01D	Spring 1	Water	4/20/05 1105	4/21/05	ANIONS_W *	Anions by IC	☐	☐	5/05/05	4/22/05
05-2757-01E	Spring 1	Water	4/20/05 1105	4/21/05	CARB/BICARB_W	Carbonate and Bicarbonate	☐	☐	5/05/05	5/04/05
05-2757-02A	Spring 2	Water	4/20/05 1125	4/21/05	TDS_W	Total Dissolved Solids (TDS)	☐	☐	5/05/05	4/27/05
05-2757-02B	Spring 2	Water	4/20/05 1125	4/21/05	MEEP_W *	RSK175M: Methane	☐	☐	4/26/05	5/04/05
05-2757-02C	Spring 2	Water	4/20/05 1125	4/21/05	200.7_T *	200.7 Total Metals	☐	☐	5/05/05	10/17/05
05-2757-02D	Spring 2	Water	4/20/05 1125	4/21/05	ANIONS_W *	Anions by IC	☐	☐	5/05/05	4/22/05
05-2757-02E	Spring 2	Water	4/20/05 1125	4/21/05	CARB/BICARB_W	Carbonate and Bicarbonate	☐	☐	5/05/05	5/04/05

Definitions: * - Test Code has a Select List

02

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Page ___ of ___

Evergreen Analytical Laboratory Inc.

4036 Youngfield St.
Wheat Ridge, Colorado 80033
(303) 425-6021
FAX (303) 425-6854
(877) 737-4521
e-mail info@evergreenanalytical.com

Report Results by: _____ (Date)*
Standard 2 working weeks ☐
UST Analyses per Fee Schedule ☐
* Rush: ☐ less than 24 hrs, 150% ☐ 1 - 2 work days, 100%
☐ 3 - 5 work days, 50% ☐ 6 - 9 work days, 25%
*Subject to surcharge & exceptions noted in fee schedule.

CLIENT INFORMATION

CLIENT LT Environmental
ADDRESS 4400 W 46th Ave
CITY Denver STATE CO ZIP 80212
PHONE 303-433-9788 FAX 303-433-1432 E-mail ksiesser@ltenv.com

REPORT BY ☐ MAIL ☐ FAX ☐ PDF ☐ EDD
REPORT CHROMATOGRAMS ☐ YES ☐ NO
REPORT TO (Mr/Ms) John Peterson
INVOICE TO Maureen Anderson
PROJECT I.D. OG-CC0503.05
P.O. # _____ EAL. QUOTE # _____
Sampler: Kyle D Siesser (sign)

NOTE: *Identify Known Hazards Below*

SAMPLE IDENTIFICATION	DATE SAMPLED	TIME	No. of Containers	MATRIX: 1)Drinking Water or 2)Discharge Water or 3) Ground Water (circle one)	MATRIX: Soil / Solid / Air / Gas	MATRIX: Oil / Sludge / Wipe	ANALYSES: TCLP VOA/BNA/Pest/Herb/Metals (circle)	Volatile Organics 8260/624 (circle)	Semi-volatile Organics BNA, PAH, PNA 8270/625 (circle)	Pesticides 8081/8270/608 (circle)	PCBs/8082/608/screen (circle)	Herbicides 8151	BTEX 8021/602/8260/MTBE (circle)	TVPH 8015mod. (Gasoline)	TEPH 8015mod. (Diesel)	Total Metals-DW / NPDES / SW846 (circle & list metals below)	Dissolved Metals - DW / SW846 (circle & list metals below)	TRPH 418.1, O&G 413.1, 1664 (circle)	COD, NH_3, TOC, TP (circle)	AlK, BOD, pH, (TDS) TSS (circle)	Dissolved CH_4	Major Anions-Cations- Na, Ca, Mg, K	Major Anions-Chloride, Bromide Carbonate/Bicarbonate, Sulfate				For Laboratory use only
Spring 1	4/20/05	1105																	X	X	X	X					01
Spring 2	4/20/05	1125																	X	X	X	X					02
																											metals pH<2

Does this analysis involve property transfer? ☐Yes or ☐No

Instructions: 3 day turn around on Dissolved CH_4, all other analyses Standard

Sample Fractions: C, BF

For Laboratory use only:
W.O.# 05-2757
B.O.F.# 9810
C/S (C) 6/6 / AM
C/S (I) 6/6 / HD
Cooler Temp. °C 3
Seals Present Y / N NA
Seals Intact Y / N
Samples Pres Y / N / NA
Headspace Y / N NA
By no /

** **Important Note:** See reverse side hereof for terms and conditions.

Relinquished by: (*Signature*)	Date/Time	Received by: (*Signature*)	Date/Time	Relinquished by: (*Signature*)	Date/Time	Received by: (*Signature*)	Date/Time
Kyle D Siesser	4/21/05 1620		4/21/5 4:20				

Evergreen Analytical, Inc.

Date: *06-May-05*

Client Project ID: OGCC0503.05
Lab Order: 05-2757

CASE NARRATIVE

SAMPLE RECEIVING

Sample(s) were hand delivered to the laboratory by the client.
Custody seals were not present.
The temperature of the sample(s) upon arrival was 3 °C.
Sample(s) were received in good condition, in the proper container, and within holding times.
Sample(s) were preserved properly ; VOC sample(s) were marked as preserved on the bottle labels.
VOC sample(s) were received with no headspace present. NJO

QUALITY ASSURANCE

Analyses performed on samples in this work order meet the requirements of the EAL Quality Assurance Program. Analyses of RCRA samples meet the requirements of NELAC and Utah Rule R444-14. CMS

CLIENT SERVICES

There are no anomalies to report. AMU

GENERAL CHEMISTRY

There are no anomalies to report. MM

METALS ANALYSIS

There are no anomalies to report. WKH

GAS CHROMATOGRAPHY

Method MEEP_W: There are no anomalies to report. CS

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862

(303) 425-6021

Client Project ID OGCC0503.05
Collection Date: 4/20/05

Lab Order: 05-2757
Date Received: 4/21/05
Units: mg/L

Carbonate and Bicarbonate
Bicarbonate

Method: SM2320 B **Prep Method:**

Lab ID	Client ID	Matrix	Date Prepared	Date Analyzed	Results	LQL	DF
05-2757-01E	Spring 1	Water	4/27/05	4/27/05	255	5.0	1
05-2757-02E	Spring 2	Water	4/27/05	4/27/05	232	5.0	1

Comments

R.P. Mussett

Analyst

Approved

Qualifiers: J - Indicates an estimated value when the compound is detected, but is below the LQL
U - Compound analyzed for but not detected
X - See case narrative

Definitions: DF - Dilution Factor
LQL - Lower Quantitation Limit

Print Date: 4/27/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Project ID OGCC0503.05
Collection Date: 4/20/05

Lab Order: 05-2757
Date Received: 4/21/05
Units: mg/L

Carbonate and Bicarbonate
Carbonate

Method: SM2320 B **Prep Method:**

Lab ID	Client ID	Matrix	Date Prepared	Date Analyzed	Results	LQL	DF
05-2757-01E	Spring 1	Water	4/27/05	4/27/05	U	5.0	1
05-2757-02E	Spring 2	Water	4/27/05	4/27/05	U	5.0	1

Comments

R. P. Merrill
Analyst

Approved

Qualifiers: J - Indicates an estimated value when the compound is detected, but is below the LQL
U - Compound analyzed for but not detected
X - See case narrative

Definitions: DF - Dilution Factor
LQL - Lower Quantitation Limit

Print Date: 4/27/05

Evergreen Analytical, Inc.

Date: *27-Apr-05*

Work Order: 05-2757
Client Project ID: OGCC0503.05

ANALYTICAL QC SUMMARY REPORT

TestCode: CARB/BICARB_W

Sample ID: **MBLK**	SampType: **MBLK**	TestCode: **CARB/BICAR**	Run ID: **ALK_050427A**	Prep Date: **4/27/05**	Units: **mg/L**
	Batch ID: **R16621**	TestNo: **SM2320 B**	FileID: **1**	Analysis Date: **4/27/05**	SeqNo: **307872**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bicarbonate	U	5.0									
Carbonate	U	5.0									

Sample ID: **LCS**	SampType: **LCS**	TestCode: **CARB/BICAR**	Run ID: **ALK_050427A**	Prep Date: **4/27/05**	Units: **mg/L**
	Batch ID: **R16621**	TestNo: **SM2320 B**	FileID: **2**	Analysis Date: **4/27/05**	SeqNo: **307873**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bicarbonate	101.2	5.0	103	0.7295	98.2	90	110	0	0		

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
H - Sample exceeded analytical holding time

Print Date: 4/27/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Project ID OGCC0503.05
Collection Date: 4/20/05

Lab Order: 05-2757
Date Received: 4/21/05
Units: mg/L

Total Dissolved Solids (TDS)
Total Dissolved Solids

Method: SM 2540C **Prep Method:**

Lab ID	Client ID	Matrix	Date Prepared	Date Analyzed	Results	LQ
05-2757-01A	Spring 1	Water	4/25/05	4/26/05	463	10.(
05-2757-02A	Spring 2	Water	4/25/05	4/26/05	462	10.(

Comments

R. P. Mueller
Analyst

Approved

Qualifiers: J - Indicates an estimated value when the compound is detected, but is below the LQL
U - Compound analyzed for but not detected
X - See case narrative

Definitions: DF - Dilution Factor
LQL - Lower Quantit

Print Date: 4/27/05

Work Order: 05-2757
Client Project ID: OGCC0503.05

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID: **MBLK**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_050426A**	Prep Date: **4/25/05**	Units: **mg/L**
	Batch ID: **R16597**	TestNo: **SM 2540C**	FileID: **1**	Analysis Date: **4/26/05**	SeqNo: **307522**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	U	10.0									

Sample ID: **LCS**	SampType: **LCS**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_050426A**	Prep Date: **4/25/05**	Units: **mg/L**
	Batch ID: **R16597**	TestNo: **SM 2540C**	FileID: **2**	Analysis Date: **4/26/05**	SeqNo: **307523**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	399	10.0	400	0	99.8	90	110	0	0		

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
H - Sample exceeded analytical holding time

Print Date: 4/27/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Spring 1	**Lab Work Order**	05-2757
Client Project ID:	OGCC0503.05	**Lab Sample ID:**	05-2757-01B
Date Collected:	4/20/05	**Sample Matrix:**	Water
Date Received:	4/21/05	**Lab File ID:**	GAS0422014
Date Prepared:	4/22/05	**Method Blank:**	GB0042205
Date Analyzed:	4/22/05	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	1.00

Method: RSKSOP175M **RSKSOP-175M HEADSPACE**
Prep Method: RSKSOP175M **Units: mg/L**

Analytes	CAS Number	Result	LQL
Methane	74-82-8	0.0026	0.00080

Analyst

Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Sample exceeded analytical holding time
J - Indicates an estimated value when the compound is detected, but is below the LQL
S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL)

Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate

Print Date: 4/22/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Spring 2	**Lab Work Order**	05-2757
Client Project ID:	OGCC0503.05	**Lab Sample ID:**	05-2757-02B
Date Collected:	4/20/05	**Sample Matrix:**	Water
Date Received:	4/21/05	**Lab File ID:**	GAS0422015
Date Prepared:	4/22/05	**Method Blank:**	GB0042205
Date Analyzed:	4/22/05	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	1.00

Method: RSKSOP175M **RSKSOP-175M HEADSPACE**
Prep Method: RSKSOP175M

Units: mg/L

Analytes	CAS Number	Result	LQL
Methane	74-82-8	U	0.00080

Analyst

Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
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U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL)

Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate

Print Date: 4/22/05

Evergreen Analytical, Inc.

Date: *22-Apr-05*

Work Order: 05-2757
Client Project ID: OGCC0503.05

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS-042205

Sample ID: GB0042205	SampType: MBLK	TestCode: MEEP_W	Run ID: FID4_050422A	Prep Date: 4/22/05	Units: mg/L
	Batch ID: GAS-042205	TestNo: RSKSOP175	FileID: GAS0422003	Analysis Date: 4/22/05	SeqNo: 306498

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	U	0.00080									

Sample ID: LCS042205	SampType: LCS	TestCode: MEEP_W	Run ID: FID4_050422A	Prep Date: 4/22/05	Units: mg/L
	Batch ID: GAS-042205	TestNo: RSKSOP175	FileID: GAS0422004	Analysis Date: 4/22/05	SeqNo: 306499

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.57	0.0080	0.5094	0	112	61	133	0	0		

Sample ID: LCSD042205	SampType: LCSD	TestCode: MEEP_W	Run ID: FID4_050422A	Prep Date: 4/22/05	Units: mg/L
	Batch ID: GAS-042205	TestNo: RSKSOP175	FileID: GAS0422005	Analysis Date: 4/22/05	SeqNo: 306500

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.562	0.0080	0.5094	0	110	61	133	0.57	1.42	30	

Sample ID: 05-2721-05BMS	SampType: MS	TestCode: MEEP_W	Run ID: FID4_050422A	Prep Date: 4/22/05	Units: mg/L
	Batch ID: GAS-042205	TestNo: RSKSOP175	FileID: GAS0422017	Analysis Date: 4/22/05	SeqNo: 306492

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.5486	0.0080	0.5094	0	108	61	133	0	0		

Sample ID: 05-2721-05BMSD	SampType: MSD	TestCode: MEEP_W	Run ID: FID4_050422A	Prep Date: 4/22/05	Units: mg/L
	Batch ID: GAS-042205	TestNo: RSKSOP175	FileID: GAS0422018	Analysis Date: 4/22/05	SeqNo: 306493

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methane	0.5447	0.0080	0.5094	0	107	61	133	0.5486	0.724	30	

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
H - Sample exceeded analytical holding time

Print Date: 4/22/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID: Spring 1
Client Project ID: OGCC0503.05
Date Collected: 4/20/05
Date Received: 4/21/05

Lab Work Order: 05-2757
Lab Sample ID: 05-2757-01
Sample Matrix: Water

200.7 TOTAL METALS, WATER

Method: E200.7 **Prep Method: E200.7/SW3010**

Date Prepared: 4/22/05
Date Analyzed: 4/26/05
Lab File ID: 042505PM
Method Blank: MB-7120
Dilution Factor: 1
Lab Fraction ID: 05-2757-01C

Analytes	CAS Number	Result	LQL	Units
Calcium	7440-70-2	78	0.39	mg/L
Magnesium	7439-95-4	29	0.15	mg/L
Potassium	7440-09-7	2.4	0.34	mg/L
Sodium	7440-23-5	21	0.40	mg/L

Analyst

Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Sample exceeded analytical holding time
J - Indicates an estimated value when the compound is detected, but is below the LQL
S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL)

Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 5/2/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID: Spring 2
Client Project ID: OGCC0503.05
Date Collected: 4/20/05
Date Received: 4/21/05

Lab Work Order: 05-2757
Lab Sample ID: 05-2757-02
Sample Matrix: Water

200.7 TOTAL METALS, WATER

Method: E200.7 **Prep Method: E200.7/SW3010**

Date Prepared: 4/22/05
Date Analyzed: 4/26/05
Lab File ID: 042505PM
Method Blank: MB-7120
Dilution Factor: 1
Lab Fraction ID: 05-2757-02C

Analytes	CAS Number	Result	LQL	Units
Calcium	7440-70-2	82	0.39	mg/L
Magnesium	7439-95-4	27	0.15	mg/L
Potassium	7440-09-7	2.6	0.34	mg/L
Sodium	7440-23-5	23	0.40	mg/L

Analyst

Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Sample exceeded analytical holding time
J - Indicates an estimated value when the compound is detected, but is below the LQL
S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL)

Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 5/2/05

Evergreen Analytical, Inc.

Date: *02-May-05*

Work Order: 05-2757
Client Project ID: OGCC0503.05

ANALYTICAL QC SUMMARY REPORT

TestCode: 200.7_T

Sample ID: **MB-7120**	SampType: **MBLK**	TestCode: **200.7_T**	Run ID: **ICP_050425A**	Prep Date: **4/22/05**	Units: **mg/L**
	Batch ID: **7120**	TestNo: **E200.7**	FileID: **042505PM**	Analysis Date: **4/25/05**	SeqNo: **307396**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	U	0.39									
Magnesium	U	0.15									
Potassium	U	0.34									
Sodium	U	0.40									

Sample ID: **LCS-7120**	SampType: **LCS**	TestCode: **200.7_T**	Run ID: **ICP_050425A**	Prep Date: **4/22/05**	Units: **mg/L**
	Batch ID: **7120**	TestNo: **E200.7**	FileID: **042505PM**	Analysis Date: **4/25/05**	SeqNo: **307401**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9.05	0.39	10	0.09917	90.5	74	113	0	0		
Magnesium	9.125	0.15	10	0.02836	91.3	76.7	114	0	0		
Potassium	8.56	0.34	10	0	85.6	70.9	115	0	0		
Sodium	9.118	0.40	10	0.3911	91.2	73.6	112	0	0		

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
H - Sample exceeded analytical holding time

Print Date: 5/2/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID: Spring 1
Client Project ID: OGCC0503.05
Date Collected: 4/20/05 1105
Date Received: 4/21/05

Lab Work Order 05-2757
Lab Sample ID: 05-2757-01
Sample Matrix: Water

ANIONS BY IC

Method: E300 **Prep Method:**

Date Prepared: 4/26/05
Date Analyzed: 4/26/05 1044
Method Blank: M. BLANK
Dilution Factor: 1
Lab Fraction ID: 05-2757-01D

Analytes	CAS Number	Result	LQL	Units
Chloride	16887-00-6	20.2	0.50	mg/L
Bromide	24959-67-9	0.0600	0.050	mg/L

Date Prepared: 4/26/05
Date Analyzed: 4/26/05 1145
Method Blank: M. BLANK
Dilution Factor: 5
Lab Fraction ID: 05-2757-01D

Analytes	CAS Number	Result	LQL	Units
Sulfate	14808-79-8	134	2.5	mg/L

J. Lange
Analyst

Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Sample exceeded analytical holding time
J - Indicates an estimated value when the compound is detected, but is below the LQL
S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL)

Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 4/27/05

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID: Spring 2
Client Project ID: OGCC0503.05
Date Collected: 4/20/05 1125
Date Received: 4/21/05

Lab Work Order 05-2757
Lab Sample ID: 05-2757-02
Sample Matrix: Water

ANIONS BY IC

Method: E300 **Prep Method:**

Date Prepared: 4/26/05
Date Analyzed: 4/26/05 1057
Method Blank: M. BLANK
Dilution Factor: 1
Lab Fraction ID: 05-2757-02D

Analytes	CAS Number	Result	LQL	Units
Chloride	16887-00-6	22.6	0.50	mg/L
Bromide	24959-67-9	0.0600	0.050	mg/L

Date Prepared: 4/26/05
Date Analyzed: 4/26/05 1215
Method Blank: M. BLANK
Dilution Factor: 5
Lab Fraction ID: 05-2757-02D

Analytes	CAS Number	Result	LQL	Units
Sulfate	14808-79-8	142	2.5	mg/L

J. Lange
Analyst

Approved

Qualifiers:
B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Sample exceeded analytical holding time
J - Indicates an estimated value when the compound is detected, but is below the LQL
S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL)

Definitions:
NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 4/27/05

Evergreen Analytical, Inc.

Date: *27-Apr-05*

Work Order: 05-2757
Client Project ID: OGCC0503.05

ANALYTICAL QC SUMMARY REPORT

TestCode: ANIONS_W

Sample ID: **M. BLANK**	SampType: **MBLK**	TestCode: **ANIONS_W**	Run ID: **IC-DX120_050426A**	Prep Date: **4/26/05**	Units: **mg/L**
	Batch ID: **R16608**	TestNo: **E300**	FileID:	Analysis Date: **4/26/05**	SeqNo: **307655**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	U	0.50									
Bromide	U	0.050									
Sulfate	U	0.50									

Sample ID: **LCS**	SampType: **LCS**	TestCode: **ANIONS_W**	Run ID: **IC-DX120_050426A**	Prep Date: **4/26/05**	Units: **mg/L**
	Batch ID: **R16608**	TestNo: **E300**	FileID:	Analysis Date: **4/26/05**	SeqNo: **307654**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	18.33	1.0	20	0	91.7	90	110	0	0		
Bromide	19.88	0.10	20	0	99.4	90	110	0	0		
Sulfate	28.67	1.0	30	0	95.6	90	110	0	0		

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank
H - Sample exceeded analytical holding time

Print Date: 4/27/05

ANALYSIS REPORT

Lab #:	82023	Job #:	6077
Sample Name/Number:	Spring 1		
Company:	LT Environmental		
Date Sampled:	4/21/2005		
Container:	Square Plastic Bottle		
Field/Site Name:	Bondad		
Location:			
Formation/Depth:			
Sampling Point:			
Date Received:	4/27/2005	Date Reported:	5/03/2005

Component	Chemical mol. %	Chemical Air Free vol. %	Delta 13C per mil	Delta D per mil	Delta 15N per mil
Carbon Monoxide	nd	nd			
Hydogen Sulfide	nd	nd			
Helium	nd	nd			
Hydrogen	nd	nd			
Argon	1.08	1.41			
Oxygen	14.59				
Nitrogen	82.21	91.60			
Carbon Dioxide	2.11	6.95			
Methane	0.012	0.040			
Ethane	nd	nd			
Ethylene	nd	nd			
Propane	nd	nd			
Iso-butane	nd	nd			
N-butane	nd	nd			
Iso-pentane	nd	nd			
N-pentane	nd	nd			
Hexanes +	nd	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.7psia, calculated: 0

Specific gravity, calculated: 1.003

Remarks:

Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.51

nd = not detected. na = not analyzed. Isotopic composition of carbon is relative to VPDB. Isotopic composition of hydrogen is relative to VSMOW. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100 percent. Mol. % is approximately equal to vol. %