METHANE MITIGATION WELL AQUIFER TESTING REPORT

Submitted to:
PETROGLYPH ENERGY, INC.

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1 EXECUTIVE SUMMARY

Norwest Applied Hydrology (Norwest) was retained by Petroglyph Energy, Inc. (Petroglyph) to assist in the drilling and testing of wells to be used for a remedial pumping and injection system to treat migration of methane from deep coal bed methane production in the Vermejo Formation into the upper Poison Canyon Formation at Petroglyph's Little Creek Field in Huerfano County, Colorado. The remedial pumping and injection program is a multi-phased program designed to mitigate high levels of methane in domestic water wells, investigate the source of the methane, and develop a long term solution to prevent future inflows of methane to domestic wells.

Coal bed methane production from the Vermejo Formation at the Little Creek Field is believed to have contributed to the presence of methane in the shallow aquifer system of the Poison Canyon Formation and associated domestic water wells in the vicinity of the field. The production field was shut-in and Petroglyph began an investigation to define the extent of methane in shallow aquifers and determine the source and pathway. The initial investigations have shown that the gas present in the shallow aquifer and associated domestic wells has a similar signature to the gas being produced by Petroglyph I from the Vermejo Formation; however the pathway for the gas migration to the shallower aquifer has not yet been determined. The extent of the methane has been determined and a program has been developed to isolate the methane in the Poison Canyon aquifer system in the identified area through creation of a hydraulic barrier. Phase 1 of the program includes pumping from Poison Canyon Formation wells installed in the center of the area, off gassing the methane from the wells and produced water and flaring the gas (with a potential to recover the methane for use in the future, once exact quantities are better defined), and then injecting the produced water back into the same aquifer zone from which it was withdrawn in a series of perimeter injection wells. The pumping will remove methane and create a hydraulic gradient toward the pumping wells. Injection of produced water during Phase 1 will be operated under gravity flow with no applied pressure. Testing and monitoring of the Poison Canyon aquifer system mitigation wells was performed. This included the monitoring of all wells for water pressure fluctuations in addition to monitoring gas production from the pumped wells and the recovery wells. Additionally, the type of gas venting was also monitored during pumping at the pumped well and a water quality sample was collected at the end of testing.

The purpose of this report is to describe the aquifer and gas flow testing and monitoring conducted to identify the permeability and connectivity of mitigation wells, both recovery and injection, within the Poison Canyon aquifer system to assure that the mitigation system will allow for collecting in a controlled manner the venting of fugitive gas, instead of the currently uncontrolled movement of gas, from the shallow aquifer system to domestic water wells. The data compiled from this testing will also be incorporated into numerical modeling for water and gas flow predictions.

The results of the testing indicate that water and gas connectivity within the Poison Canyon Formation is relatively limited. Calculated permeabilities for Poison Canyon Formation mitigation wells span three

orders of magnitude with values between 1 and 1,037 millidarcys. The water quality samples collected from the mitigation wells also supports a relatively disconnected system and indicates several primary drinking water standards are exceeded under baseline conditions. While, the connectivity of water and gas is not evident during this testing the connectivity of gas is observed in nearby domestic water wells where significant declines, down to below measurable rates, in gas flow have been observed since the onset of mitigation well drilling and completion. Additionally, increased gas production is shown during pumping of the recovery wells indicating enhanced removal and hydraulic control of fugitive gas away from domestic wells.

2 BACKGROUND INFORMATION

2.1 GEOLOGY AND HYDROGEOLOGY

Petroglyph's operation occurs in the Raton Basin and is located southwest of the city of Walsenburg, Colorado (Figure 2.1-1). The operation produces coal bed methane from the Vermejo Formation located at a depth of approximately 1,700 feet in the project area. The Vermejo Coal Formation outcrops approximately 3 to 3.5 miles to the east of the project area. The outcrop is visible in some areas and the coal has been mined along the outcrop.

Figure 2.1-2 shows the stratigraphic sequence for the project area. Underlying the Vermejo Formation is the Trinidad Sandstone Formation. The Vermejo Formation and the Trinidad Formation appear to be hydrologically connected and pumping in one formation will affect piezometric pressures in the other formation. Overlying the Vermejo Formation is the Raton Formation. The Raton Formation is approximately 600 feet thick in the project area and also contains coal seams; however within the project area these seams are less continuous and thinner than in other portions of the Raton Basin. The Poison Canyon Formation lies above the Raton Formation, approximately 800 to 1,000 feet above the Vermejo Formation, and serves as a shallow drinking water source for many property owners in the vicinity of the project area. Although water is available in the Poison Canyon Formation, the sand lenses which contain the water are discontinuous and the water source is not considered to have long-term, consistent reliability. The US Geological Survey issued Water Supply Paper 1805 (Ground Water in Huerfano County, Colorado) in 1966 and in this publication discussed the limitations of the Poison Canyon Formation as a water source including the fact that yields from the aquifer were small and the use of the aquifer for water supply would be subject to perennial water shortages (USGS 1966).

Crossing the project area are numerous dike structures. These structures are intrusions radiating from and formed during the intrusion of the Spanish Peaks. The dike structures do not appear to provide hydraulic connectivity from the Vermejo and Trinidad Formations to the Poison Canyon Formation in the project area as evidenced by differences in hydraulic heads from these units.

Figure 2.1-1. Domestic water well and Petroglyph Energy, Inc. well locations.

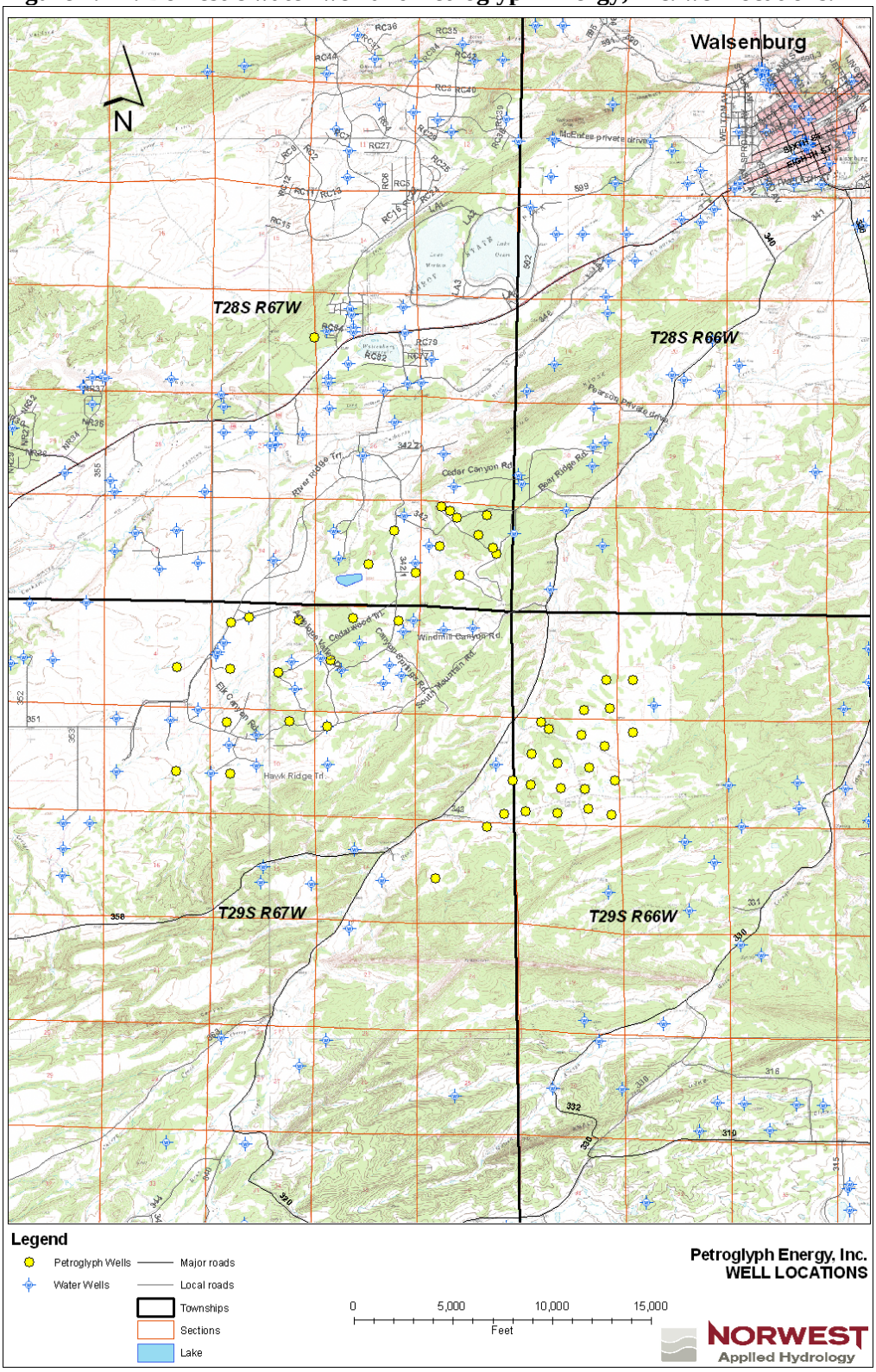
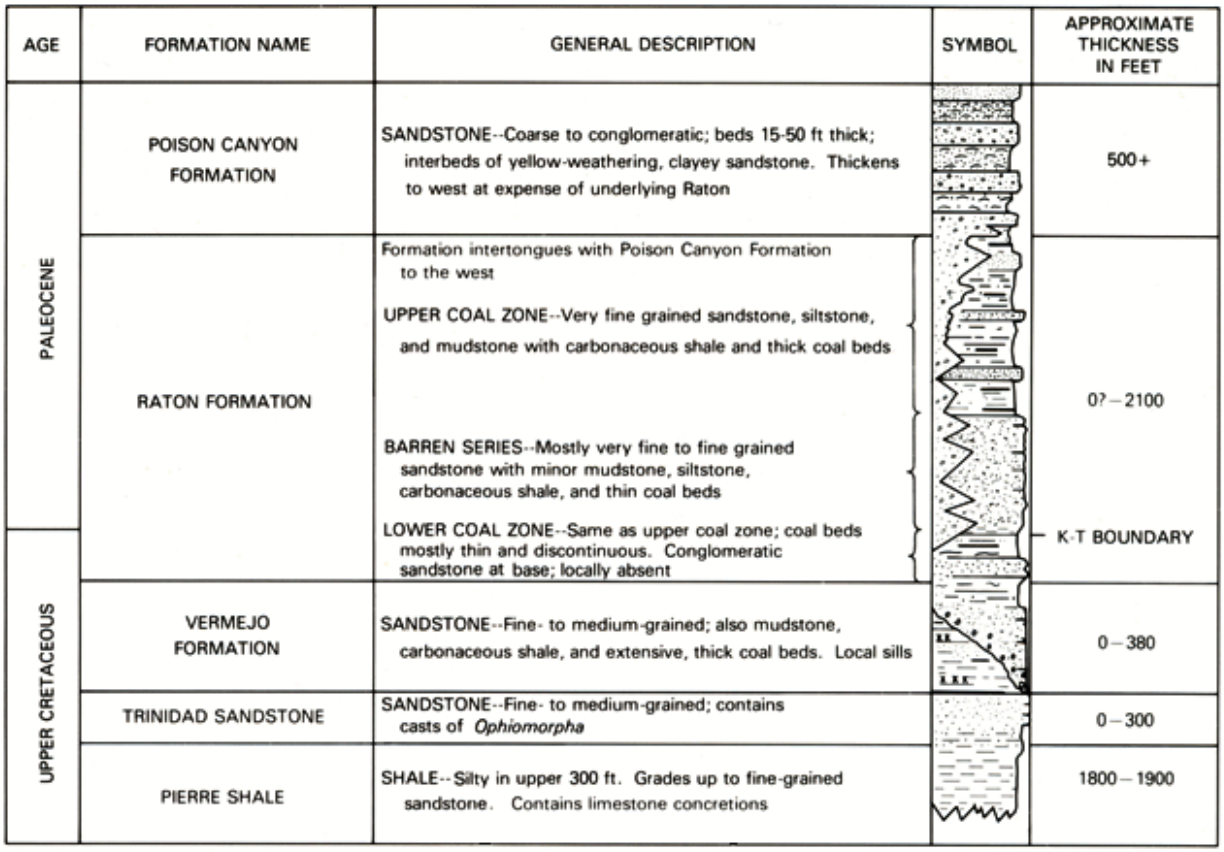


Figure 2.1-2. Stratigraphic representation of the major formations within the Raton basin.



AGE	FORMATION NAME	GENERAL DESCRIPTION	APPROXIMATE THICKNESS IN FEET
PALEOCENE	POISON CANYON FORMATION	SANDSTONE--Coarse to conglomeratic; beds 15-50 ft thick; interbeds of yellow-weathering, clayey sandstone. Thickens to west at expense of underlying Raton	500+
PALEOCENE	RATON FORMATION	Formation intertongues with Poison Canyon Formation to the west UPPER COAL ZONE--Very fine grained sandstone, siltstone, and mudstone with carbonaceous shale and thick coal beds BARREN SERIES--Mostly very fine to fine grained sandstone with minor mudstone, siltstone, carbonaceous shale, and thin coal beds LOWER COAL ZONE--Same as upper coal zone; coal beds mostly thin and discontinuous. Conglomeratic sandstone at base; locally absent	0?–2100 K-T BOUNDARY
UPPER CRETACEOUS	VERMEJO FORMATION	SANDSTONE--Fine- to medium-grained; also mudstone, carbonaceous shale, and extensive, thick coal beds. Local sills	0–380
UPPER CRETACEOUS	TRINIDAD SANDSTONE	SANDSTONE--Fine- to medium-grained; contains casts of *Ophiomorpha*	0–300
UPPER CRETACEOUS	PIERRE SHALE	SHALE--Silty in upper 300 ft. Grades up to fine-grained sandstone. Contains limestone concretions	1800–1900

2.2 PETROGLYPH OPERATIONS IN HUERFANO COUNTY

Petroglyph began operation of the Little Creek Field to recover coal bed methane in 1998. Water was pumped from the Vermejo coal to dewater the coal seam and allow release of the methane gas for recovery by Petroglyph. Pumping rates were increased in mid 2005 and heads in the Vermejo dropped rapidly as a result of the pumping increases. As a result of detection of methane in domestic wells, Petroglyph voluntarily and temporarily shut in its wells on July 20, 2007. Petroglyph began a program to investigate, monitor and mitigate the presence of methane in the Poison Canyon Formation.

Upon the discovery of methane in the shallow drinking water wells and shutting in of the coal bed methane production wells, Petroglyph in a cooperative effort with the COGCC initiated an investigation, monitoring and mitigation program. The program included an evaluation of nearby domestic wells for the presence of methane; a gas composition and isotope analysis to determine the origin of the methane, an evaluation of the potential pathways for gas migration including an evaluation of drill holes in the vicinity; and monitoring of pressure and water level in coal bed methane wells and water wells.

2.3 INVESTIGATION AND REMEDIATION

Methane has migrated from the lower Vermejo Formation into the Poison Canyon Formation which lies approximately 800 to 1,000 feet above. While the conduit or conduits which allow this seepage to occur have not been defined and parties may disagree on the potential contribution from natural or manmade conduits, there is no argument that the methane gas present in the Poison Canyon Formation has migrated from the Vermejo Formation. Some gas could have been present in the Poison Canyon Formation prior to Petroglyph's operations and anecdotal evidence does exist that gas has been present in the drinking water aquifer in free and dissolved form for quite some time.

At this time, the size and nature of the conduit between the shallow Poison Canyon aquifer and the Vermejo coals is unknown. However; the data obtained to date does not support wide-spread naturally occurring conduits because the shallow aquifers have water pressure heads which are over 500 feet higher than the Vermejo coals and have not shown the rapid decrease and subsequent rebound that the Vermejo coal's water pressure head has shown since the mid 2005 increase in Vermejo water production and July 2007 field shut-in.

Petroglyph in conjunction with the COGCC have been actively monitoring both the shallow aquifer water wells and the coal bed methane wells to gather data for the purpose of understanding the extent and nature of the communication between the Poison Canyon formation and Vermejo coal formation, provide baseline data and to provide a scientific and data driven framework to mitigate the communication. A proactive three phase plan has been developed by PETROGLYPH and approved by the COGCC to mitigate methane migration from CBM wells located in the Little Creek Field in Huerfano County, Colorado.

The Phase 1 remediation program will include pumping a series of shallow ground water wells, removing methane, and reinjecting the ground water back into the same shallow ground water formation in a ring around the outside of the pumping wells. Phase 1 will provide the removal of methane from pumping wells and begin to create a hydraulic gradient for the flow of ground water and associated methane toward the pumping wells.

3 MITIGATION WELL TESTING INTRODUCTION

From July 07, 2008 through August 25, 2008 Norwest staff conducted aquifer testing of mitigation injection and recovery wells as a part of Phase I of the three phase plan designed to mitigate the migration of methane gas from the CBM production zones to the Poison Canyon formation and into nearby domestic water wells. Phase I involves aquifer data acquisition and characterization; initiation and testing of the proposed methane removal system and baseline data monitoring. This report provides the data acquisition and testing results from aquifer testing.

3.1 TESTING DESCRIPTION

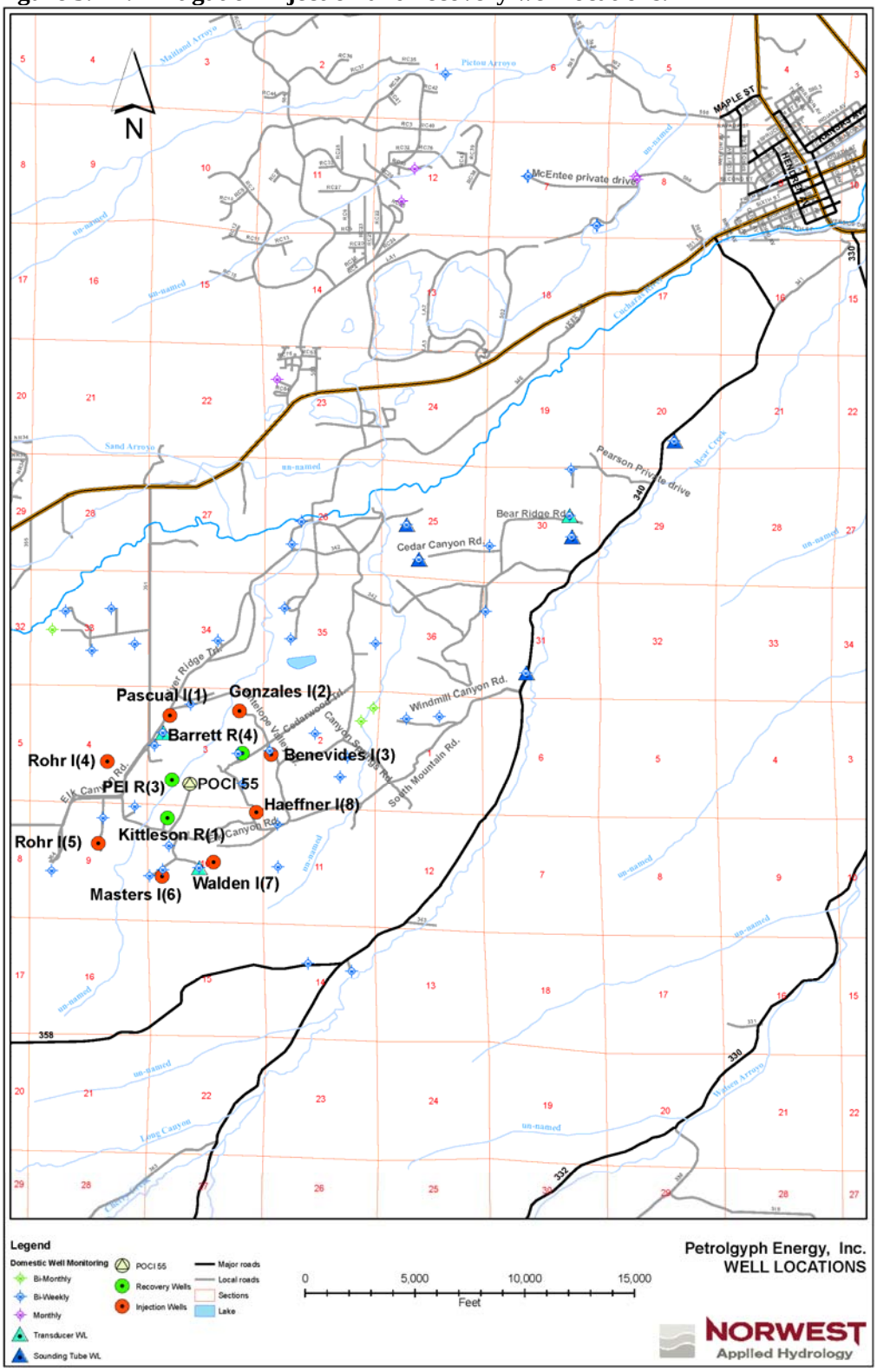
Norwest staff working with Petroglyph Energy, Inc. (Petroglyph) personnel conducted a series of 11 short term step rate tests and longer duration 12 hour drawdown tests on each of the 8 injection (Inj.) and 3 recovery (Rec.) wells at the site. The results were used to determine the permeability and connectivity within the Poison Canyon Formation in the area of methane migration. The wells tested included injection wells 01 through 08 and recovery wells 1, 3 & 4. The 11 wells are spread over an area encompassing 5 land sections within the Petroglyph CBM production field southwest of Walsenburg, CO (Figure 3.1-1). The topography of the site is undulating with ground level elevation (gl) at the wells ranging from 6,587 feet (ft) above sea level at the Inj 02 Gonzales to 6,832 (ft) at the Inj 07 Walden. Well depths range from 500 (ft) in the Rec. 4 Barrett to 750 (ft) in the Inj. 07 Walden. The injection wells were constructed with 4.5" outer diameter (OD) plain casing and 4.56" (OD) 0.020" slotted screen sections. The recovery wells were constructed with 5.5" (OD) plain casing and 6.5" (OD) 0.020" slotted screen sections. Screen and plain casing footages differ between wells with construction based on local formation geology. A summary of well completion information is provided in Table 3.1-1. The results from the testing are outlined in the following sections.

Table 3.1-1. Mitigation well summary completion details.

Well Name	Depth to Welded Plate (ft)*	Depth to Top of Screen (ft)*	Borehole Diameter (ft)	Pitless Stick Up	Screen OD (inches)	Screen ID (inches)	Casing OD (inches)	Casing ID (inches)
Rec 1 Kittleson (1st)	702.36	493.04	0.9667	2.67	6.00	4.892	5.50	4.892
Rec 1 Kittleson (2nd)	702.36	493.04	0.9667	2.67	6.00	4.892	5.50	4.892
Rec 3 PEI	589.04	468.31	0.9583	2.37	6.00	4.892	5.50	4.892
Rec 4 Barrett	481.32	384.92	0.9167	2.35	6.00	4.892	5.50	4.892
Inj 01 Pascual	523.65	411.14	0.8333	2.38	4.56	4.06	4.50	3.875
Inj 02 Gonzalas	572.80	345.59	0.8333	2.38	4.56	4.06	4.50	3.875
Inj 03 Benvides	626.71	408.57	0.8333	2.68	4.56	4.06	4.50	3.875
Inj 04 Rohr	664.52	548.56	0.8333	2.38	4.56	4.06	4.50	3.875
Inj 05 Rohr	732.93	403.03	0.8542	2.38	4.56	4.06	4.50	3.875
Inj 06 Masters (2nd)	722.87	411.90	0.8542	2.13	4.56	4.06	4.50	3.875
Inj 07 Walden	710.69	505.10	0.8542	2.38	4.56	4.06	4.50	3.875
Inj 08 Haeffner	608.68	340.17	0.8330	2.38	4.56	4.06	4.50	3.875

* measured from middle of pitless

Figure 3.1-1. Mitigation injection and recovery well locations.



4 TESTING AND MONITORING PROCEDURES

Well testing was conducted in two stages; a short term step rate test designed to determine a sustained pumping rate, and a longer 12 hour test utilizing the previously determined pumping rate. During each test a temporary pump was installed in the wells. The pump, associated pipe and electrical equipment were handled by Weber Drilling (Weber) of Walsenburg, Colorado. Depth and pump size was determined by Norwest and Petroglyph staff based on previous data recorded during the drilling and development of the wells. Four different pumps were utilized during testing with horse powers (HP) of 1.5, 2.0, 5.0 and 7.5 to account for the wide range of variability observed in the Poison Canyon during drilling and development. Three different pipes strings of 1.66 (OD) were furnished by Petroglyph and were rotated throughout testing to facilitate testing multiple wells. Pump set depths were designed to maximize water column in the well while reducing the potential entrainment of sediment associated with placing the pump to close to the bottom or across the screened sections. During testing each well was equipped with an In Situ Level Troll that measures pressure and temperature. Transducers were suspended by a direct read cable in all mitigation wells except for the testing well. For the testing well the transducer was strapped to the pipe string approximately 4 to 7 feet above the pump intake. Prior to the start of each test a static water level was measured from the middle of the pitless adapter on the stick up section of the well casing and used to calibrate the pressure transducer to a true water level prior to commencement of testing. Water level measurements were also collected at the end of the testing after removal of the pump and associated testing equipment.

Step rate testing was conducted with three or more increasing pumping rates with the objective of determining a sustainable rate for a 12 hour test. The initial step rate was determined loosely on information obtained during drilling and development. The final step was typically the rate used for the long term pump test. However, if the last rate of the step test was too great the rate was lowered to accommodate a longer term test. The total duration of the step test and the duration of each individual step varied depending on the observed pressure response and associated pumping rate depending on the productivity or the well and discharge that could be affected by well development and or connectivity. Step test durations ranged from 0.45 hours to over 2.5 hours. Upon completion of the step rate testing the wells were allowed to recover prior to starting the long term drawdown test. Well recovery was monitored with the pressure transducer and the subsequent 12 hour pumping test was not initiated until the water level in the well had returned to at least 90% of its original level.

The long term pumping tests were conducted over a continuous 12 hour time span. During testing, water discharged from the well was passed through a gas/water separator before being released to the surface. The discharge rate was controlled by a series of valves attached to a flow rate meter and a well-head pressure gauge, all located on the upstream side of the separator. Gas was measured by a Barton recorder on the separator prior to discharge into the atmosphere and in the well casing at the well-head. Water flow rate, total gallons discharged, and well-head pressure were collected every minute for the initial 30

minutes of testing with subsequent measurements collected on a varying time scale of 0.5 hour to 1 hour to 1.5 and 3 hour intervals based on the ability of the well to stabilize through the duration of the test. Gas produced during testing was measured and collected in the casing and at the gas water separator. Gas monitoring parameters included, flow rate (MCF/d), percent lower explosive limit (LEL) of combustible gas (primarily CH_4), percent volume of combustible gas if above 100% LEL (primarily CH_4), parts per million (ppm) of H_2S, percent volume of O_2, and parts per million of CO. Collection time intervals mirrored the water discharge monitoring. Ideally the discharge rate selected during the step rate test was used for the duration of the pumping test. In several wells, during testing, discharge rates varied due to changes in well productivity during pumping caused by additional well development brought about by pumping, gas production caused by the lowering of the water level in the well, and or the well becoming unsustainable at the selected rate due to under prediction of drawdown. Additionally, several wells were repeatedly tested to obtain quality test results where initial testing resulted in poor or incomplete data due to variables effecting the testing, including well development, gas production, and higher then anticipated production rates. The recovery 1 Kittleson and injection 06 Masters wells were tested twice, and injection 04 Rohr well was tested three times.

During the 12 hour aquifer testing well discharge was also monitored for water quality parameters including, pH, temperature, and specific conductivity. Prior to shutting down the long term 12 hour aquifer test a final set of water quality parameters was collected in addition to a water quality sample collected for major ions and constituents listed as regulatory standards.

5 TESTING AND MONITORING DATA ANALYSIS

The focus of the aquifer testing and analysis is to calculate Poison Canyon permeability and determine potential connectivity of water and combustible gas within the Poison Canyon formation. The resulting information is used in numerical modeling of the two phase gas and water flow and determination of approximate pumping and injection rates for the mitigation system. Additionally, the water quality samples collected are used to describe the baseline water quality of the Poison Canyon formation prior to mitigation start-up and to support or refute potential aquifer connectivity. Field data, including pumping rates, gas monitoring, and water quality parameters are provided in Appendix A.

5.1 WATER PRESSURE DATA

The analyses of the aquifer test data were conducted using the testing analysis software AQTESOLV®, a program that is used to determine aquifer transmissivity accounting for hydrologic, geologic, and well completion variables. The data used as input into AQTESOLV® including static water levels is provided in Table 5.1-1. The pump test data were initially analyzed in AQTESOLV® using the Cooper/Jacobs solution. The Cooper/Jacob (developed in 1946) method is based on a straight-line approximation of the Theis (1935) equation. Although the Cooper/Jacob solution assumes a line source for the pumped well (therefore neglecting wellbore storage) and assumes the well to be fully penetrating in a confined aquifer, it was used as a first approximation of aquifer transmissivity. Because many of the wells do not fully penetrate the aquifer and have not been fully developed (therefore are suspected of having a wellbore skin effect) additional analysis of the pump test data were conducted using the Dougherty/Babu solution in AQTESOLV®. The Dougherty/Babu (1984) method involves a Laplace transform solution for a constant-rate test that can be modified to evaluate a constant-head test in a homogeneous, anisotropic confined aquifer assuming a fully or partially penetrating well with a wellbore skin effect. Taking the wellbore skin effect into account should more accurately represent the aquifer conditions. In general, the transmissivity calculated using the Dougherty/Babu solution is an order of magnitude larger than the transmissivity calculated using the Cooper/Jacob solution indicating that the aquifer tests were affected by a wellbore skin. All analyses were adjusted (by fitting the transmissivity, storativity, and in the Dougherty/Babu solution, wellbore skin parameters) to provide a best-fit match that most closely fit both the water displacement data and the derivative of the displacement. The closer the best-fit line matches the data, the more confidence in the solution modeling aquifer and pumping conditions. Once transmissivity values for each well were determined, the permeability was calculated. This calculation involved dividing the transmissivity by the aquifer thickness, converting units, and assuming a water density of 62.4 lb/ft^3. The resulting permeability data from AQTESOLV® analyses is presented in millidarcy's (md) in Table 5.1-2.

Transmissivity in each well was first calculated and analyzed in AQTESOLV® as a single well acting as both an observation and pumping location. For each pumping test, a Microsoft Excel chart of the observation data from the surrounding monitoring wells and pumping well was plotted on the same chart,

although with a different y-axis. Comparison of the monitoring well pressure data at times correlated to aquifer testing it was possible to determine if a hydrologic connection existed between the wells: if an aquifer test produced a noticeable change in a monitoring well then a connection possibly existed between the pumping well and that monitoring well. If a connection between two wells was found, then the AQTESOLV® analysis could be further refined by adding the monitoring well observation data as a second observation source. However, analysis and comparison of pressure data from pumped wells and wells used as monitoring points, including POCI 55, indicate that there is no distinct connection during the aquifer tests performed. Figures of water pressure data are provided in Appendix B with all of the AQTESOLV® analyses shown and selected higher producer wells have their pressure data also plotted with nearby monitor well pressure data for examples of determining interferences or responses due to pumping. POCI 55 was monitored above and below a bridge plug set at 620 feet below land surface. While some fluctuations in the upper zone of POCI 55 coincide with Inj 07 Walden and Rec 1 Kittleson on the second test, the first Rec 1 Kittleson test does not show a response and the Inj 07 Walden test produced very little water, approximately 70 gallons and would not be enough to impact the pressure in POCI 55. POCI 55 lower zone monitoring shows variation due to equipment accuracy and no apparent trends related to testing. As a note, the data for the last two tests of Inj 02 Gonzales and Rec 3 PEI are not provided on the POCI 55 as they were not available at the time of this report; however the tests are not expected to show a response due to the low production rates and short test durations.

Table 5.1-1. AQTESOLV® input parameters for transmissivity calculations.

Well Name	Start of Test	Initial Bottom Hole Pressue (PSI) (pre-test)	Final Bottom Hole Pressue (PSI) (post-test)	End of Test	Static Water Level Prior to Step Test (ft)*	Total Volume Pumped (gallons)	Saturated Thickness (ft)*** Aqtesolv "b"	Static H2O to Screen (ft) Aqtesolv "d"	Total Screened Sections (ft) Aqtesolv " L"	Inside Radius Well Casing (ft) Aqtesolv "r(c)"	Radius of Drop Pipe (ft) Aqtesolv "r(eq)"	Radius Open/Perf. Interval (ft) Aqtesolv "r(w)"
Rec 1 Kittleson (1st test)	7.8.08 7:36	74.20	41.05	16:03	494.27	7,698	208.09	0.00	69.20	0.2038	0.0692	0.2500
Rec 1 Kittleson (2nd test)	8.4.08 13:59	82.46	23.70	8.5 2:00	494.27	18,235	208.09	0.00	69.20	0.2038	0.0692	0.2500
Rec 3 PEI	8.25.08 8:06	60.34	10.21	20:13	419.32	1,055	169.72	48.99	59.26	0.2038	0.0692	0.2500
Rec 4 Barrett	7.10.08 9:53	29.00	1.29	14:53	374.00	177	107.32	10.92	64.26	0.2038	0.0692	0.2500
Inj 01 Pascual	7.31.08 7:51	40.67	12.01	19:51	408.65	1,435	115.00	2.49	39.38	0.1615	0.0692	0.1900
Inj 02 Gonzalas	8.20.08 8:22	95.27	52.76	20:23	309.15	1,781	263.65	36.44	29.35	0.1615	0.0692	0.1900
Inj 03 Benvides	7.16.08 7:00	81.64	23.48	19:32	418.85	799	207.86	0.00	29.60	0.1615	0.0692	0.1900
Inj 04 Rohr	7.23.08 13:52	91.54	25.52	7.24 1:59	421.35	11,756	243.17	127.21	39.14	0.1615	0.0692	0.1900
Inj 05 Rohr	7.28.08 9:43	120.00	90.19	21:41	440.80	10,002	292.13	0.00	59.41	0.1615	0.0692	0.1900
Inj 06 Masters (2nd)	7.15.08 6:51	107.45	13.80	18:56	402.78	3,364	320.09	9.12	59.14	0.1615	0.0692	0.1900
Inj 07 Walden	7.29.08 9:15	54.26	8.28	15:15	540.35	70	170.34	0.00	49.43	0.1615	0.0692	0.1900
Inj 08 Haeffner	8.7.08 15:39	53.53	6.34	17:21	337.80	125	270.88	2.37	49.44	0.1615	0.0692	0.1900

* measured from middle of pitless

**As determined from Mud logs. Measurements have been adjusted from original to include the pitless standup to be standardized with all other measurements

*** Saturated thickness as determined from static water level to bottom of well

The (2nd) designation for the Rec 1 Kittleson & the Inj 06 Masters means that two pumping tests were run. The second test is the one being used for the analysis.

Table 5.1-2. Permeability results calculated using solutions in AQTESOLV®.

Well Name	Test Date	Permeability (md)		Average Production (gpm)	Fit of AQTESOLV® Analyses	
		Cooper/ Jacob	Dougherty /Babu		Cooper/ Jacob	Dougherty/ Babu
Rec 1 Kittleson	8/4/2008	67	626	25.08	adequate	good
Rec 3 PEI	8/25/2008	7	47	1.47	adequate	adequate
Rec 4 Barrett	7/10/2008	0.7	4	0.40	tentative	good
Inj 01 Pascual	7/31/2008	20	72	2.18	adequate	adequate
Inj 02 Gonzalas	8/20/2008	18	302	2.46	adequate	tentative
Inj 03 Benevides	7/17/2008	1.4	15	0.99	adequate	good
Inj 04 Rohr	7/23/2008	86	717	16.05	tentative	adequate
Inj 05 Rohr	7/28/2008	100	1037	13.93	tentative	good
Inj 06 Masters	7/15/2008	10	37	4.51	tentative	tentative
Inj 07 Walden	7/29/2008	0.2	1.0	0.17	adequate	good
Inj 08 Haeffner	8/7/2008	-	-	-	-	-

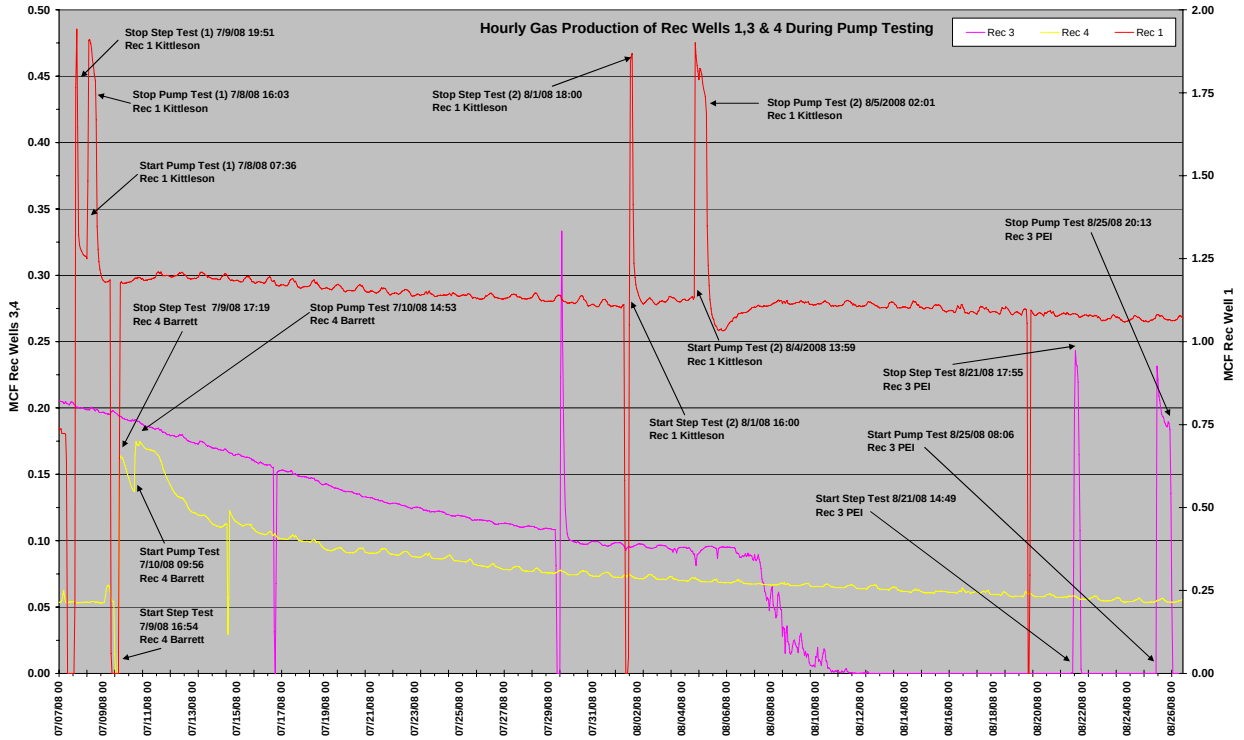
5.2 GAS FLOW RESPONSE TO AQUIFER TESTING

5.2.1 Mitigation Well Gas Data Analysis

Gas production is measured on a continuous hourly and daily output in Recovery Wells 1, 3, & 4 using a Totalflow 6213 recording instrument. Gas flow data was analyzed on an hourly scale to assure spikes in pressure were not missed or subdued. Gas production in each well was analyzed for the duration of the aquifer testing period, roughly from the beginning of July through early September (Figures 5.2-1 and 5.2-2). This time frame was contracted slightly for analysis of the hourly production data due to the increase in data points. Production data was graphed on a time verses production scale. The three sets data representing recovery well gas production are graphed together to determine any existing correlation between pumping events and changes in gas production at other recovery wells.

To better understand the relationships between pumping and gas production, hourly gas data was graphed on a time verses production scale (Figure 5.2.1-1 and 5.2.1-2). Increases in gas production occurred with the step rate and pump testing of each of the recovery wells and are graphically delineated by sharp spikes in production followed by a drop in gas flow rate after pumping is stopped within the pumped well. This indicates that water production from the recovery wells will enhance gas removal from the Poison Canyon Formation and that water pressure works as a hydraulic barrier to gas migration. Maintenance operations, including pump test equipment removal, are responsible for other observed gas flow rate fluctuations in addition to gas production responses associated with well aquifer testing and are displayed as sharp spikes in production wells that were not actively being pumped.

Figure 5.2.1-1
Hourly gas production of Poison Canyon mitigation recovery wells.



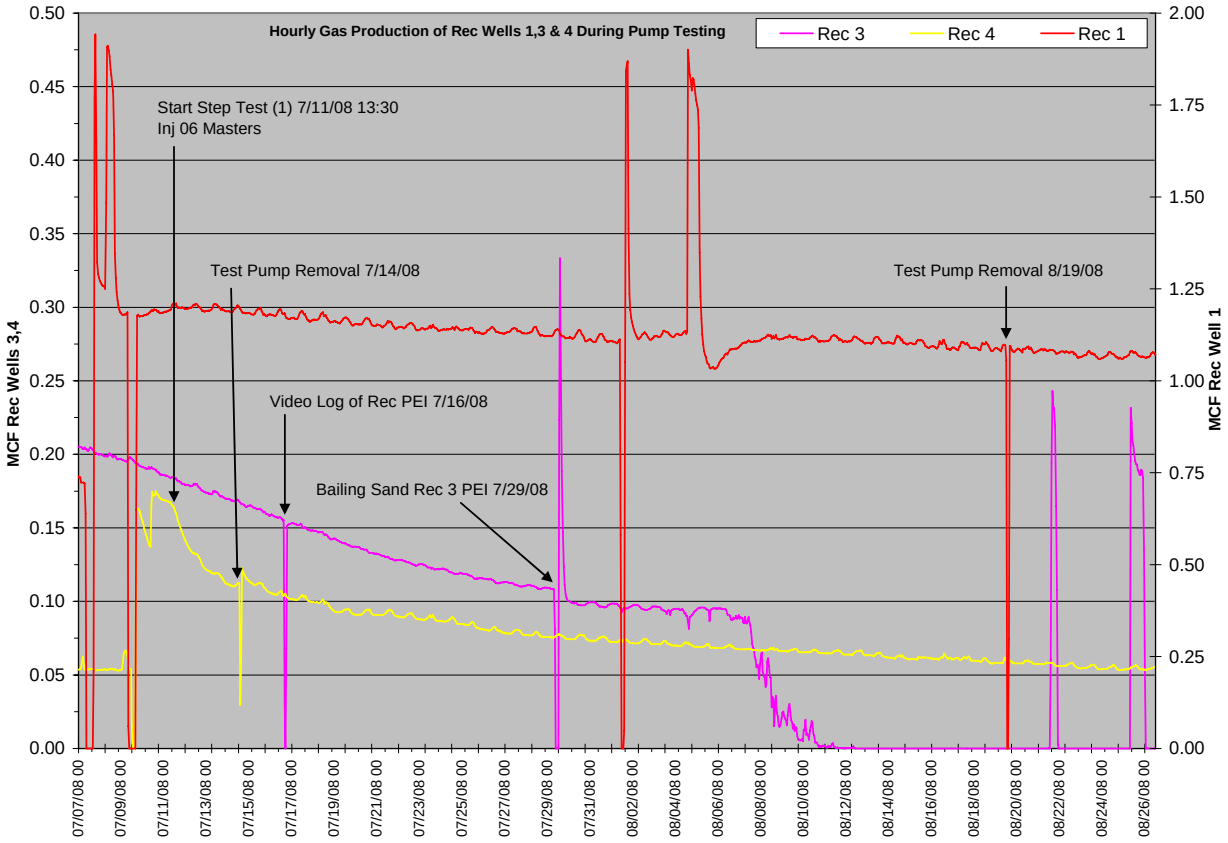
In the Rec 3 PEI well two distinct spikes in gas production appear to graphically correlate with aquifer and step tests associated with other wells. Further inspection shows that these spikes are related to maintenance and simultaneous operations associated with that well and not from pump and step testing the surrounding wells. The sharp reduction in gas production in Rec 3 PEI on July 16 is due video logging of the well and not from the onset of the Inj 03 Benevides step test which occurred at approximately the same time as the downward spike caused by the video log. The decrease in production associated with the Inj 03 Benevides lasts much longer then the actual step tests and a second significant change in gas production within the Rec 3 PEI well occurs concurrently with the aquifer test of the Inj 07 Walden on July 29, 2008. This spike is related to the bailing of sand from the Rec 3 PEI well and not the step test of the Inj 07 Walden.

A decrease in gas production from the Rec 4 Barrett well on July 14th is due to the test pump being removed from the well. Similar to the Rec 3 PEI, these spikes are not the result of the aquifer testing but are related to specific simultaneous maintenance events.

While gas production trends are generally smooth with a few sharp increasing or decreasing spikes, a less severe but observable decline in gas production of the Rec 4 Barrett occurs at the same time as the first step test of the Inj 06 Masters (Figure 5.2.1-2). During the step test of the Inj 06 Masters, the Rec 4

Barrett well shows a moderately steep decline in production that tapers off to the lower rate of decline just prior to the onset of the step test. The resulting gas production level continues on a gradual downward trend through the duration of the aquifer testing period but continues at the same general decreasing rate trend observed prior to the step test of the Inj 06 Masters after testing is completed. The subsequent pumping test on July 13, 2008 does not show a reduction in gas production in the Rec 4 Barrett as was observed during the step test. The observed fluctuations in Rec 4 Barrett are due to the aquifer testing of the Rec 4 Barrett and the change in slope of decline is a result of increased water pressure holding back gas as the well recovers and not a result of testing at the Inj 06 Masters.

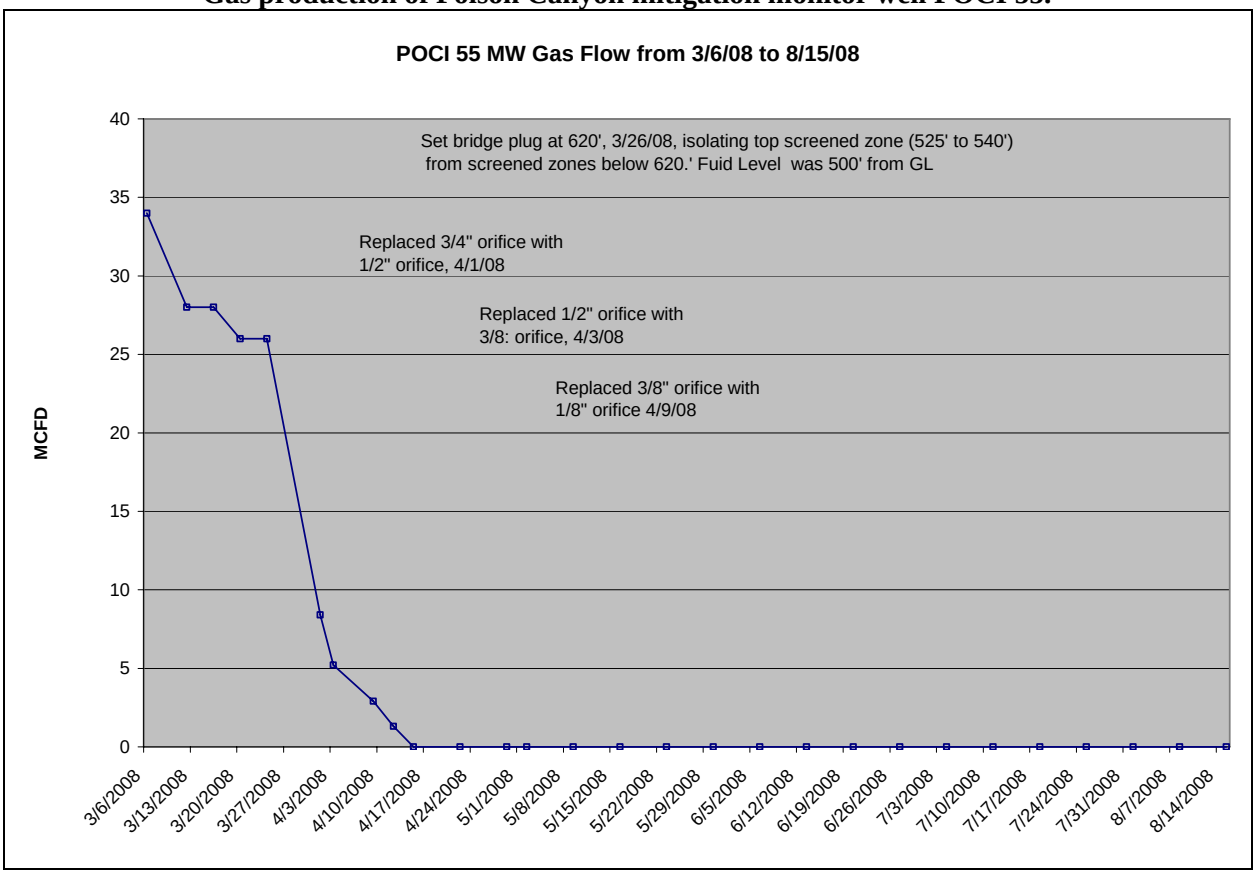
Figure 5.2.1-2
Hourly gas production of Poison Canyon mitigation recovery wells.



The Rec 1 Kittleson showed a response coinciding with the step test of the Inj 02 Gonzales, but is the result of the Rec 1 Kittleson test pump being removed, and not the influence of the aquifer testing.

Monitor well POCI 55 gas flow was also monitored during testing and remained with no recordable gas flow for the duration of testing (Figure 5.2.1-3).

Figure 5.2.1-3
Gas production of Poison Canyon mitigation monitor well POCI 55.



5.2.1.1 Mitigation Well Gas Type Data Analysis

The type of gas was monitored at each well tested during the aquifer testing from the gas water separator vent and open casing using a handheld RKI-GX2003 gas meter. As previously discussed the meter measures percent lower explosive limit (LEL) of combustible gas (primarily CH_4), percent volume of combustible gas if above 100% LEL (primarily CH_4), parts per million (ppm) of H_2S, percent volume of O_2, and parts per million of CO. The field data is provided in tables in Appendix C.

The three recovery wells produced greater than 100% LEL for combustible gas, assumed primarily methane, from the casing during testing. The Kittleson well was monitored as having primarily 100% combustible gas by volume while the PEI 3 recovery and Barrett 4 showed varying percent volumes of combustible gas with averages of 61% and 38%, respectively. Trace amounts of H_2S were also detected during testing of the Kittleson and Barrett recovery wells but not in the PEI recovery 3 well. Trace amounts of methane were also detected at the gas water separator vent for the Kittleson and PEI 3 recovery wells but were typically below the LEL for methane.

The injection wells showed a greater variation in their gas content and flow when compared to the recovery wells. The injection 06 Masters, Rohr 05, and Walden 07 injection wells showed significant contributions of combustible gas venting from the well casing all greater than 100% LEL. Master 06, Rohr 05, and Walden 07 showed average combustible gas volumes of 38% during the first aquifer test and 28% during the second test, 60%, and 56%, respectively venting from the casing. Trace amounts of methane, approximately an average of 1% by volume, and H_2S were also detected in the water gas separator vent during both of the injection 06 Masters well aquifer testing events. Rohr 05 and Walden 07 injection wells only showed a couple of very low detects, approximately 1% LEL, out of many readings for combustible gases from the separator vent during the aquifer testing.

The remaining injection wells Benevides 03, Rohr 04, Pascual 01, and Gonzales 02 indicate only ambient air at 20.9% oxygen and zero LEL, H_2S, and CO in both casing and separator readings with the exception of a couple of readings from Rohr 04 and Gonzales 02 that could be traces left over in the separator or due to instrument error.

5.2.2 Domestic Well Gas Data Analysis

Data from domestic water wells with continuous gas flow recorders were also reviewed for impacts during the aquifer testing. None of the monitored domestic water wells showed an indication of gas connectivity or fluctuation due to aquifer testing (Figures 5.2.2-1 to 5.2.2-5). However, the available data does not negate any connectivity as the wells are producing little to no gas and if aquifer testing produced increased gas flow from these areas a decrease could not be observed because of the already low to zero flow rate currently observed. It can be stated that if connectivity exists, as is hypothesized from marked reductions in gas production after installation of the mitigation wells and monitor well POCI 55, the affect is not that of increasing gas flows to domestic water wells but rather away from them. The Bounds and Bruington water wells show continuous recent gas flow rates of approximately 0.75 MCFD while the other domestic wells are below measurement levels for the recording devices used.

Figure 5.2.2-1. Bruington domestic water well gas flow rates.

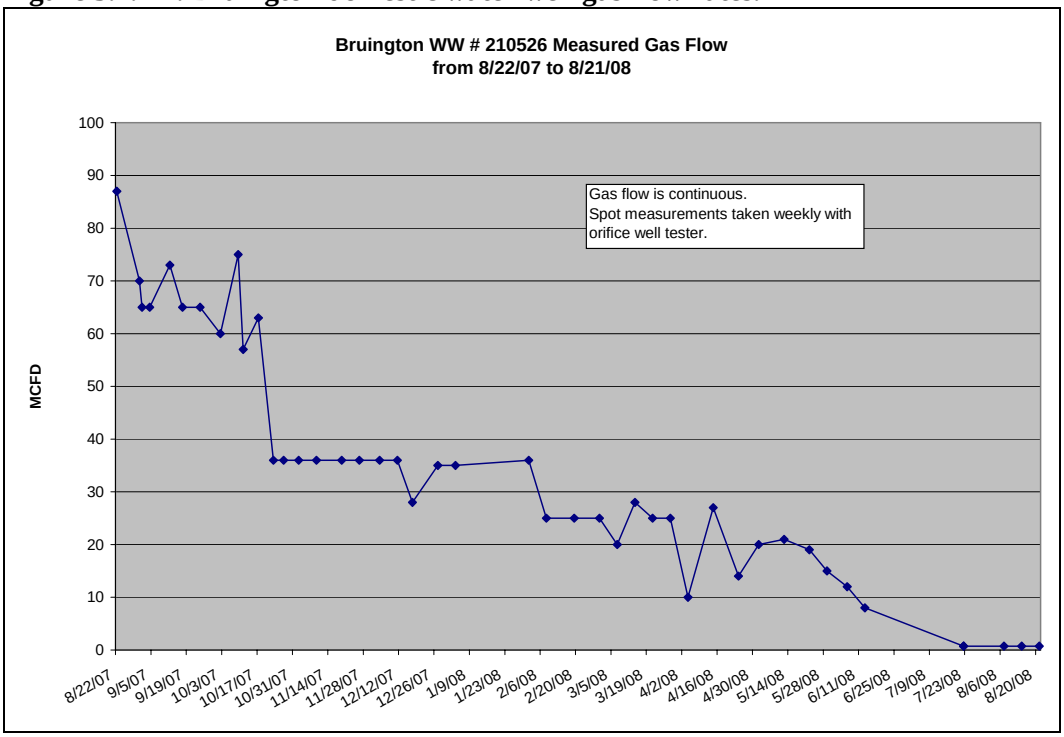


Figure 5.2.2-2. Coleman domestic water well gas flow rates.

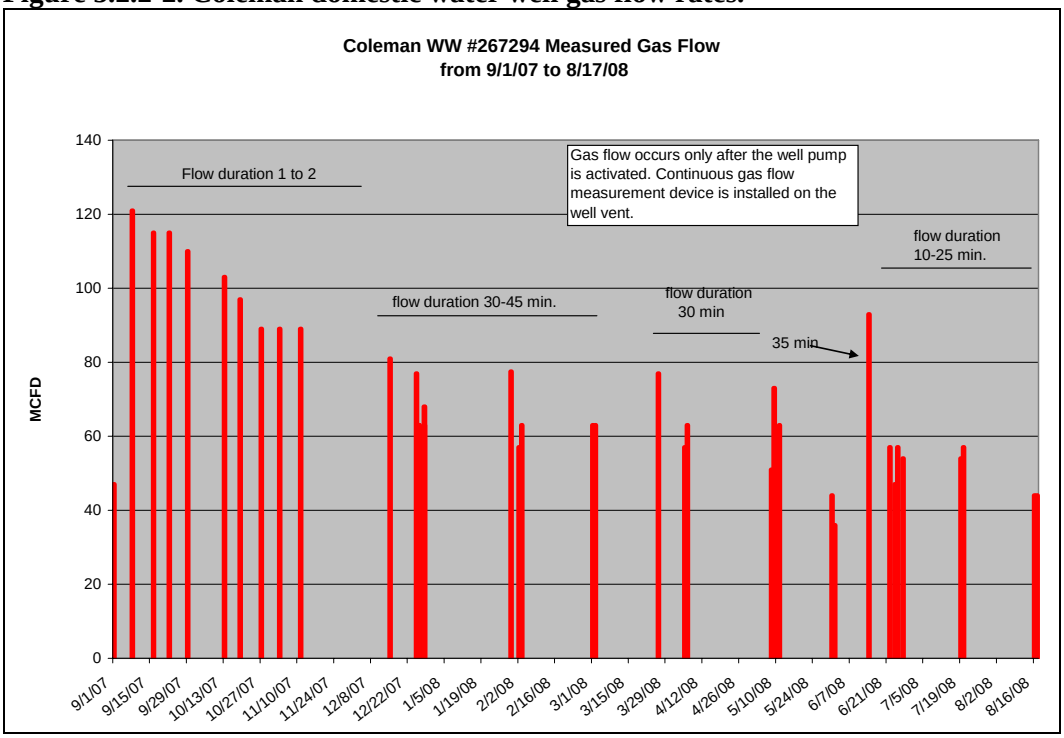


Figure 5.2.2-3. Angely domestic water well gas flow rates.

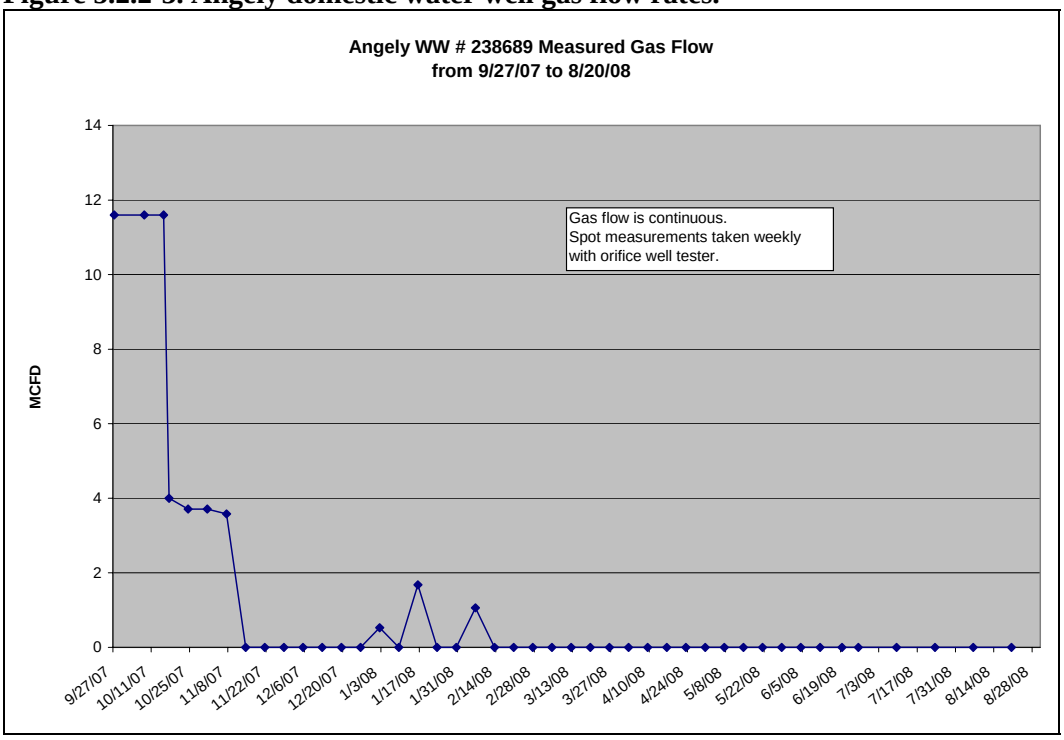


Figure 5.2.2-4. Bounds domestic water well gas flow rates.

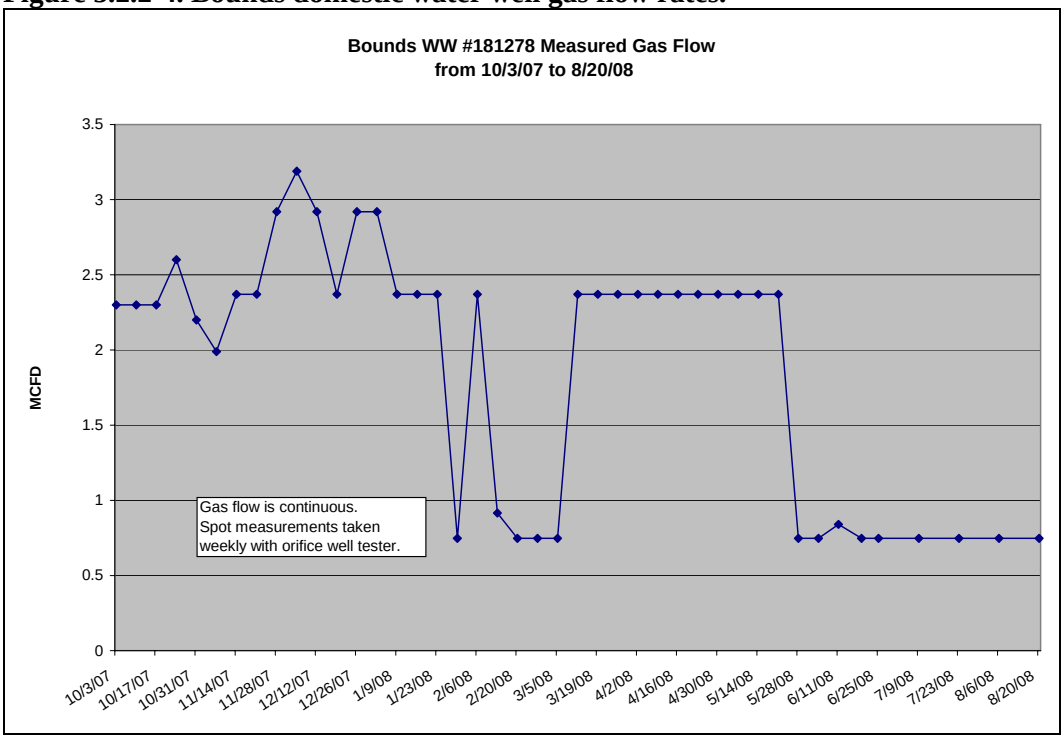
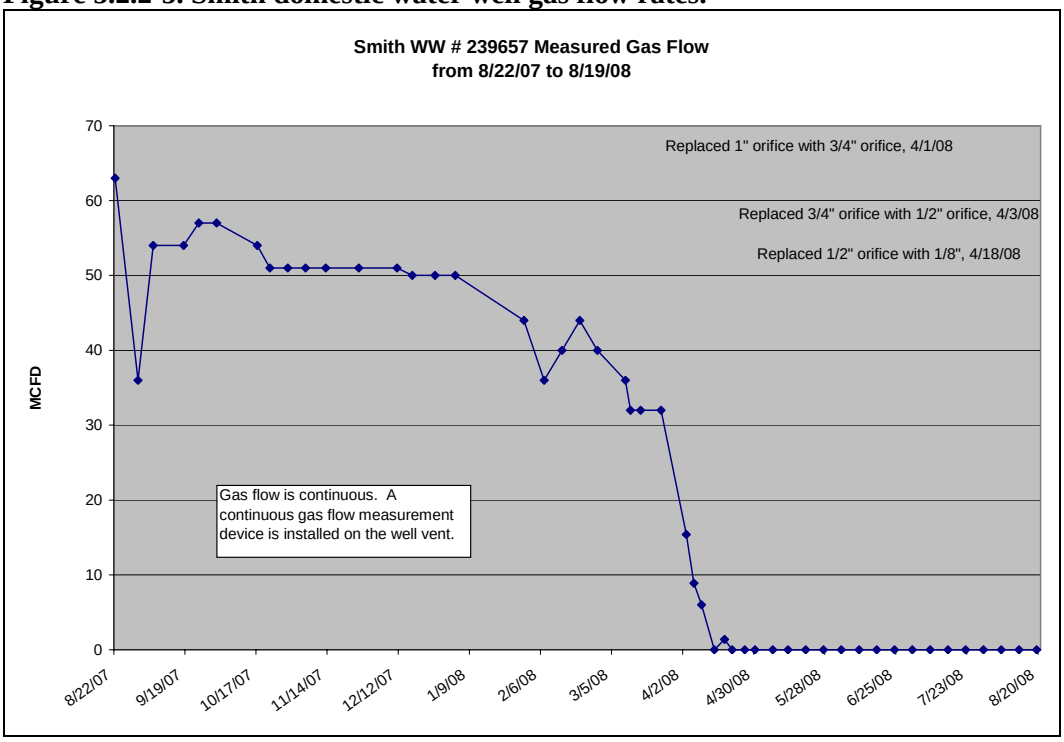


Figure 5.2.2-5. Smith domestic water well gas flow rates.



5.2.3 Gas Data Analysis Summary

While the potential exists for gas production in the recovery wells to be influenced by the pumping of the surrounding wells as noted by significant declines in domestic wells after mitigation well drilling and completion, the testing data does not suggest a strong interconnectivity in terms of water or gas. Observed fluctuations are within the pumped well itself or due to simultaneous operations of testing equipment removal during the step and aquifer pumping tests. However, the production of gas within each well as it is pumped increases within that well indicating the enhanced removal of gas as water from the recovery wells is produced and a control of gas flow by water pressure. The domestic water wells did not show any indications of increased gas flow during the testing indicating that operation of the mitigation system recovery wells will not adversely affect the domestic water wells. Since the drilling and completion of monitor well POCI 55 and the recovery and injection mitigation wells, domestic water well gas flows have dropped off significantly indicating that a passive system will remove the gas from the Poison Canyon Formation and additional pumping of the recovery wells will enhance that removal. Additionally, the use of a hydraulic barrier to prevent gas from migrating away from the mitigation area is supported by the evidence of increased gas production as water pressure is dropped because the water pressure is holding back and preventing gas flow.

5.3 WATER QUALITY ANALYSES

The following is a summary of the Poison Canyon aquifer water chemistry based on three domestic wells sampled in November 2007 and nine of the eleven injection and recovery wells (inj/rec wells) sampled in July and August of 2008 at the end of each aquifer test. Ten of the eleven injection and recovery wells described previously were sampled for major ions and regulatory constituents to provide a Poison Canyon aquifer baseline prior to mitigation system start-up. The summary is a preliminary investigation as data is still being compiled and awaiting results from Evergreen Analytical Laboratory for the last of eleven wells sampled, Recovery 3 PEI. While the last sample has not been received the overall data interpretation is not expected to significantly change and the results provided are considered representative of sampling variability. Appendix D contains the original laboratory results.

5.3.1 Sample and Data Analysis Overview

The Poison Canyon aquifer testing water quality samples collected, analytical methods, dates collected, dates received by the laboratory, and dates reported are provided as a summary in Table 5.3.1-1. Rec and Inj refer to mitigation recovery and injection wells respectively. Samples collected from domestic wells of Hopke, Derowitsch, and Coleman are also included. Sample ID and well name are used interchangeably per each well in subsequent discussions.

Recovery (rec) well 03, PEI, was the last to be sampled and data analysis including this sample is not provided until the lab results have returned for this well. Injection (inj) well 08, Haeffner, was not sampled due to extremely low pump rates and extremely long step test recovery time, on the order of weeks, resulting in forgoing a long term test. This resulted in a very small purge volume, 125 gallons, that would not provide a representative water quality sample. Rec 01 was sampled twice due to a repeat aquifer test. However, while both sample analyses are in good agreement only the Kittleson 2 sample, taken from the second aquifer test, was used in data analysis. All samples were analyzed by Evergreen Analytical Laboratory, reporting to Petroglyph Energy, Inc.

In Table 3.3.1-1 “Test codes” refer to the methods used in lab analysis to quantify each constituent set by either EPA or standard methods. “Collected” date refers to the date the sample was taken; “Received” is the date the lab received the sample; “analyzed” is the date of lab analysis and “Reported” is the date of the lab results were presented to Petroglyph Energy. Coleman, Derowitsch, and Hopke water wells were analyzed based on the EPA regulatory list for class V injection wells which includes a limited set of both organic and inorganic constituents; thus only a partial list of inorganic constituents were tested for these samples. As such the data analysis of these samples was limited. In contrast, a full suite of inorganics (major ions and trace elements) was analyzed in the inj/rec well samples in addition to the EPA regulatory constituents for class V injection wells. Concentration data was analyzed with the aid of AquaChem® software and principal component analysis using the Microsoft Excel add in package XLSTAT-Pro 2008.

The results were also compared to the screened intervals and production pump rates of each well to investigate a correlation between open intervals and chemical patterns in the data.

Table 5.3.1-1. Summary for Poison Canyon aquifer sampling events.

					Dates			
Lab	Report to	Sample ID	Well Name	Test Codes	Collected	Received	Analyzed	Reported
Evergreen Analytical	Petroglyph	Hopke ww	Hopke	524.2, 504.1, 200.7, 200.8, 245.1	11/11/07	11/13/07	11/14/07	11/28/07
		Derow ww	Derowitsch		11/12/07	11/13/07	11/14/07	11/28/07
		Coleman ww	Coleman		11/10/07	11/13/07	11/14/07	11/28/07
		Rec 01 PT1	Kittleson	524.2, 504.1 200.7, 200.8, 245.1 300.0, SM2320B, SM4500-F C, SM4500H+ B, SM2540 C	7/8/08	7/9/08	Jul 08 - Aug 08	8/6/08
		Rec 01 PT2	Kittleson 2		8/4/08	8/6/08		9/3/08
		Rec 03	PEI		8/25/08			
		Rec 04	Barrett		7/10/08	7/11/08		8/14/08
		Inj 01	Pascual		7/31/08	8/1/08		9/2/08
		Inj 02	Gonzales		8/20/08	8/21/08		9/8/08
		Inj 03	Benevides		7/17/08	7/18/08		8/14/08
		Inj 04	4 Rohr		7/24/08	7/25/08		8/25/08
		Inj 05	5 Rohr		7/28/08	7/30/08		8/25/08
		Inj 06	Masters		7/15/08	7/16/08		8/14/08
		Inj 07	Walden		7/29/08	7/30/08		9/2/08
		Inj 08	Haeffner					

5.3.2 Water Quality Results and Discussion

5.3.2.1 Raw Data

The field data is provided in Appendix A, including field parameters pH, conductivity and sample temperature along with discharge rates and volumes. An overview of the raw data for domestic water wells and injection/recovery wells including minimum detection limits (MDLs) are provided in Table 5.3.2.1-1. The limited parameter data gathered for the water wells (Coleman, Derow, Hopke) is apparent by the blank fields. If a number is preceded by a less than sign, the reported value is less than the MDL as provided by the laboratory. Only constituents with concentrations greater than non-detect value in any one sample are presented.

Table 5.3.2.1-1. Poison Canyon inorganic and organic constituents (raw data) analyzed for each sample.

Constituent	Coleman	Derow	Hopke	Kittleson2	Barrett	Pascual	Gonzales	Benevides	4 Rohr	5 Rohr	Masters	Walden
Ag (mg/L)	< 0.0001	< 0.0001	< 0.0001	< 0.00002	< 0.00002	2.73E-05	0.0000882	0.0000491	2.28E-05	2.19E-05	0.000048	0.000118
As (mg/L)	< 0.0009	< 0.0009	< 0.0009	0.0019	0.0056	0.0009	0.0008	0.0011	0.0011	< 0.0007	0.0008	0.0025
At (mg/L)	0.00038	< 0.0001	< 0.0001	< 0.00006	< 0.00006	0.00009	0.00015	0.00042	0.00007	< 0.00006	0.00027	0.00055
B (mg/L)	0.07	0.08	0.06	0.06	< 0.007	0.04	0.16	0.07	0.02	0.03	0.03	0.05
Ba (mg/L)	0.059	0.060	0.024	0.0662	0.442	0.025	0.382	0.043	0.019	0.025	0.039	0.474
Be (mg/L)	< 0.0001	< 0.0001	< 0.0001	< 0.00015	0.00401	< 0.00015	0.00168	< 0.00015	< 0.00015	< 0.00015	< 0.00015	0.00204
Br (mg/L)				0.34	0.41	0.16	0.11	0.38	0.36	0.15	0.35	0.49
Ca (mg/L)				3.8	22.8	6.6	10.4	5	8.6	5.2	3.4	14.5
Cd (mg/L)	0.000399	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Cl (mg/L)				19.5	25.1	10.1	6.9	23	28.9	11	37	57.7
Conductivity (µS/cm)				510	435	676	519	738	820	577	453	457
Cr (mg/L)	0.00427	0.00302	0.00171	0.0021	0.134	0.00312	0.0365	0.00751	0.00168	< 0.0006	0.00485	0.0361
Cu (mg/L)	< 0.0018	0.00498	0.578	0.00065	0.157	< 0.0005	0.0453	0.00742	0.00632	< 0.0005	0.00839	0.0468
F (mg/L)				7	11.7	8	6.7	3.9	4.2	3.7	7.9	15.5
Fe (mg/L)	0.922	0.519	0.137	0.079	104	2.51	35.7	2.75	0.381	1.06	3.18	41.2
HCO3 (mg/L)				114	99	59	200	140	48	108	77	102
K (mg/L)				0.219	7.13	0.528	4.59	1.23	0.402	0.337	0.726	3.25
Mg (mg/L)				0.026	15.8	0.212	7.85	0.529	0.118	0.175	0.583	5.5
Mn (mg/L)	0.0213	0.0131	0.00442	0.0124	1.7	0.0556	0.527	0.0595	0.0142	0.0262	0.0585	0.814
Mo (mg/L)	0.00668	0.00102	0.00135	0.00592	0.0217	0.0082	0.00522	0.0074	0.0103	0.00103	0.00425	0.00919
Na (mg/L)	132	195	156	97	96	140	117	149	168	117	89	91
Ni (mg/L)	0.00367	0.00342	0.00447	< 0.0003	0.0878	0.00183	0.0237	0.00426	0.000497	< 0.0003	0.00293	0.0284
NO3 (mg/L)				0.0543	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Pb (mg/L)	0.00106	< 0.0009	< 0.0009	0.000738	0.126	0.00136	0.0122	0.00274	0.000221	0.000332	0.0021	0.024
pH Field				6.28	8.83	6.72	6.77	6.96	6.26	6.45	6.22	6.41
pH Lab				8.86	9.29	9.13	8.99	8.86	9.18	8.9	9.27	9.26
SAR (mg/L)				14	4	15	7	17	16	14	12	5
Se (mg/L)	< 0.0006	0.000793	< 0.0006	0.00826	< 0.001	< 0.001	< 0.001	0.00133	< 0.001	< 0.001	< 0.001	< 0.001
SO4 (mg/L)				64	32	201	7.9	167	280	131	48	0.9
Sr (mg/L)				0.094	0.451	0.132	0.297	0.127	0.206	0.114	0.068	0.339
TDS (mg/L)				325	680	426	785	479	546	356	285	690
Total Alkalinity (mg/L)				134	130	63	226	161	60	118	96	121
Zn (mg/L)	0.012	0.010	0.039	0.006	0.474	0.020	0.14	0.028	0.019	< 0.0006	0.028	0.113
1,1,2-Trichloro-ethane (µg/L)	< 0.5	< 0.5	< 0.5	< 0.5	1.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzene (µg/L)	< 0.5	< 0.5	< 0.5	< 0.5	4.3	< 0.5	< 0.5	2.1	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform (µg/L)	0.8	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene (µg/L)	< 0.5	< 0.5	< 0.5	< 0.5	3.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (µg/L)	< 0.5	< 0.5	< 0.5	< 0.5	2.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene (µg/L)	139	< 0.5	< 0.5	< 0.5	3.8	< 0.5	< 0.5	0.8	< 0.5	< 0.5	< 0.5	0.8
Xylenes, Total (µg/L)	< 0.5	< 0.5	< 0.5	< 0.5	3.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethane (mg/L)				0.0068	0.0054	< 0.0016	0.0027	0.0049	0.0023	0.003	0.0039	0.012
Methane (mg/L)				6.8	3.5	0.6	4.2	0.28	4.5	3.1	6.3	12

5.3.2.2 Water Quality of Poison Canyon Aquifer

Although only specific samples were reported to have organic concentrations above non-detect values beyond ethane and methane, all of the concentrations found were below water quality standards including the EPA maximum contaminant limits (MCL) for class V injection wells. Coleman water well, Barrett 04 recovery mitigation well, and the Benevides and Walden mitigation injection wells had various concentrations of organic constituents above the MDL including 1,1,2-Trichloroethane, benzene,

ethylbenzene, chloroform, xylenes, toluene, and naphthalene. Origins of these organics are still being investigated. The main uses of 1,1,2-Trichloroethane, benzene and ethylbenzene are as organic solvents. Chloroform is also a solvent in addition to being used in fluorocarbon plastics and insecticides. Xylenes are solvents for resins and are found in gasoline, lacquers and enamels. Toluene is a solvent in addition to its use in a wide variety of applications, including gasoline, resins, explosives and detergents. Naphthalene also has a variety of uses (besides moth repellent) including use as a lubricant and synthetic resin. These organics are potentially from materials used in well drilling and completion that were not thoroughly purged from the wells.

A few samples are associated with inorganic constituent concentrations greater than regulatory standards, including EPA class V Underground Injection Control (UIC) criteria, EPA secondary standards and EPA drinking water standards. A summary of constituents exceeding the regulatory limits is provided.

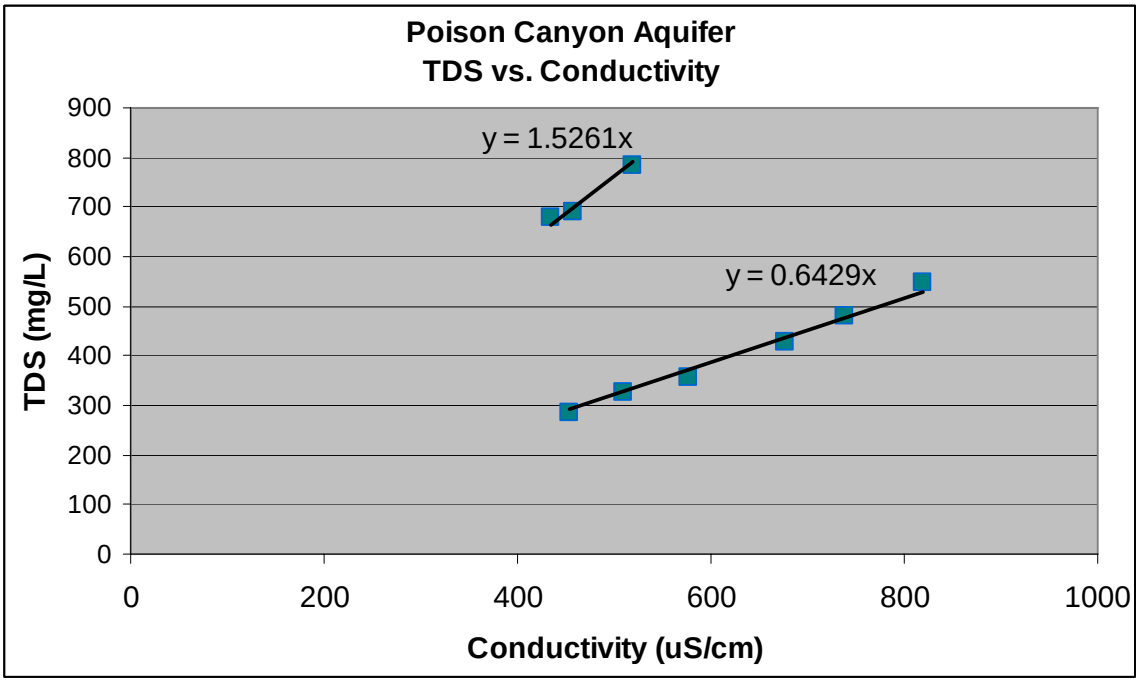
- Barrett recovery well has a total chromium concentration greater than the class V UIC limit (based on the EPA maximum contaminant level (MCL)) of 0.1 mg/L.
- Nearly all samples have fluoride concentrations greater than the drinking water standard of 4.0 mg/L except the Benevides and Rohr 05 injection well samples; all of the samples exceed the secondary drinking water standard of 2.0 mg/L for fluoride.
- Recovery wells Kittleson and Barrett, and injection wells Gonzales and Walden have iron concentrations greater than the class V UIC regulatory limit (from the EPA region 8 permit levels) of 5 mg/L (as high as 104 mg/L for Barrett); in addition, the majority of samples have iron concentrations above the secondary standard of 0.3 mg/L except mitigation.
- Barrett and Walden mitigation wells also have lead concentrations greater than the class V UIC MCL of 0.015 mg/L.
- Barrett and Walden mitigation wells also have manganese concentrations greater than the class V UIC EPA region 8 permit level of 0.8 mg/L; Pascual, Gonzales, Benevides and Masters wells all had manganese concentrations greater than the secondary standard of 0.05 mg/L.
- The Rohr 04 injection well sample has sulfate and TDS concentrations greater than the secondary standard of 250 mg/L and 500 mg/L, respectively.
- The Barrett and Walden wells have the highest TDS values of the wells also above 500 mg/L standard.

The pH data is more complex due to discrepancies between field and laboratory measurements. Although almost every laboratory measurement is about half a pH unit above the EPA secondary standard range of 6.5-8.5, almost every field measurement is below the range except Barrett (Table 5.3.2.1-1). However, the laboratory measurements are believed to be more valid than the field parameters due to a potentially faulty pH meter. The pH meter seems to have failed after a certain date as every measurement before that date are closer to the laboratory data, including the first Kittleson sample and the Barrett samples with

values of 8.65 and 8.83, respectively. The respective pH laboratory measurements for these samples were 8.93 and 9.29. A slight increase on the order of 0.5-1.0 pH units can be expected from the field to laboratory measurements due the degassing of $CO_{2(g)}$ from the sample (decrease in carbonic acid activity). Additionally, the laboratory pH values are more consistent between samples. The pH values from the laboratory are accepted as more reliable and place the average pH for Poison Canyon samples at approximately 8.5 (Table 5.3.2.1-1).

Conductivity is a function of total dissolved solids (TDS) in a natural water sample. The laboratory TDS data was plotted against the field conductivity data for each sample from the mitigation injection and recovery wells (Figure 5.3.2.2-1).

Figure 5.3.2.2-1. TDS and conductivity correlation.



Two different correlations are shown in Figure 3.3.2.2-1 for the data between TDS and conductivity. Only one correlation was expected assuming these samples originate from the same connected aquifer. The three samples with a correlation factor (slope) of 1.5 were Barrett, Walden and Gonzales. The rest of the samples correlated agreeably with a slope of 0.64. The Barrett, Walden and Gonzales wells are spread out over the mitigation site with other wells in between and are not correlated spatially. However, Barrett, Walden and Gonzales wells are associated with a higher number of constituents exceeding regulatory standards and lower water yields that resulted in very small purge volumes and may not be representative of Poison Canyon Formation groundwater.

5.3.2.3 Injection and Recovery Well Water Quality Comparison

The screened interval depths per inj/rec wells have been compared by normalizing the depths (in feet) to the well elevations as illustrated in Figure 5.3.2.3-1. The screened intervals of each well have the potential to influence the resulting overall chemistry of the well water sample as it relates to the geological bedding in which the screen is placed. In addition, the screened intervals are known to be related to the production rate or how much total water volume can be pumped from a well in a set amount of time. In the case of multiple screen intervals per well, it is difficult to determine what quantity of water a specific interval provides to a well. The pumping rate for each well was calculated based on the average water flow rate recorded during a pump test. Walden, Barrett and Benevides are associated with the lowest pump rates that are an order of magnitude lower than the other well tests (Table 5.3.2.3-1). These lowest yielding wells are also the only inj/rec wells to have detected organic constituent values other than ethane or methane (which are recurrent to each well). The Hopke domestic water well is the shallowest water well while Coleman has the greatest screened depth between the three domestic wells. How the depths of the domestic water wells and screened intervals over different bedding or sand intervals are compared to the inj/rec wells is unknown at this time and requires further investigation.

Figure 5.3.2.3-1. Well screen interval depths.

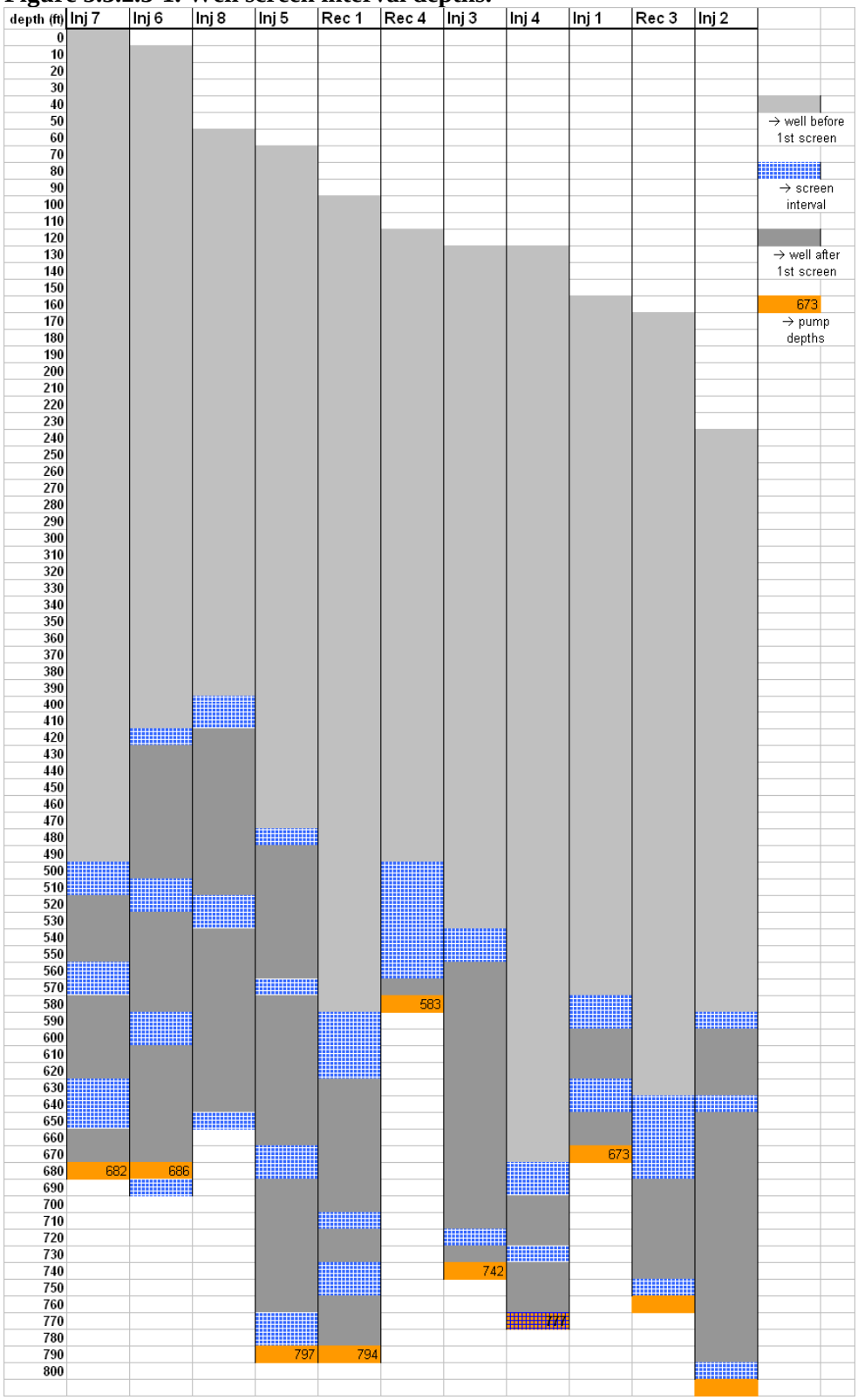


Table 5.3.2.3-1. Water flow rate comparison for each inj/rec well.

	Pump time (hr)	Ave Pump rate (gpm)	Vol Pumped (gal)
Inj 07 Walden	6.0	.28	69.8
Rec 4 Barrett	5.0	.48	176.8
Inj 03 Benevides	12.530	.88	799.3
Rec 3 PEI	12.117	2.3	1,055
Inj 01 Pascual	12.0	2.0	1,435
Inj 02 Gonzales	12.017	2.5	1,781.4
Inj 06 Masters (2nd)	11.917	4.3	3,364
Inj 05 Rohr	11.97	13.5	10,002
Inj 04 Rohr	13.10	16.1	11,756
Rec 1 Kittleson (2nd test)	12.017	25.3	18,235

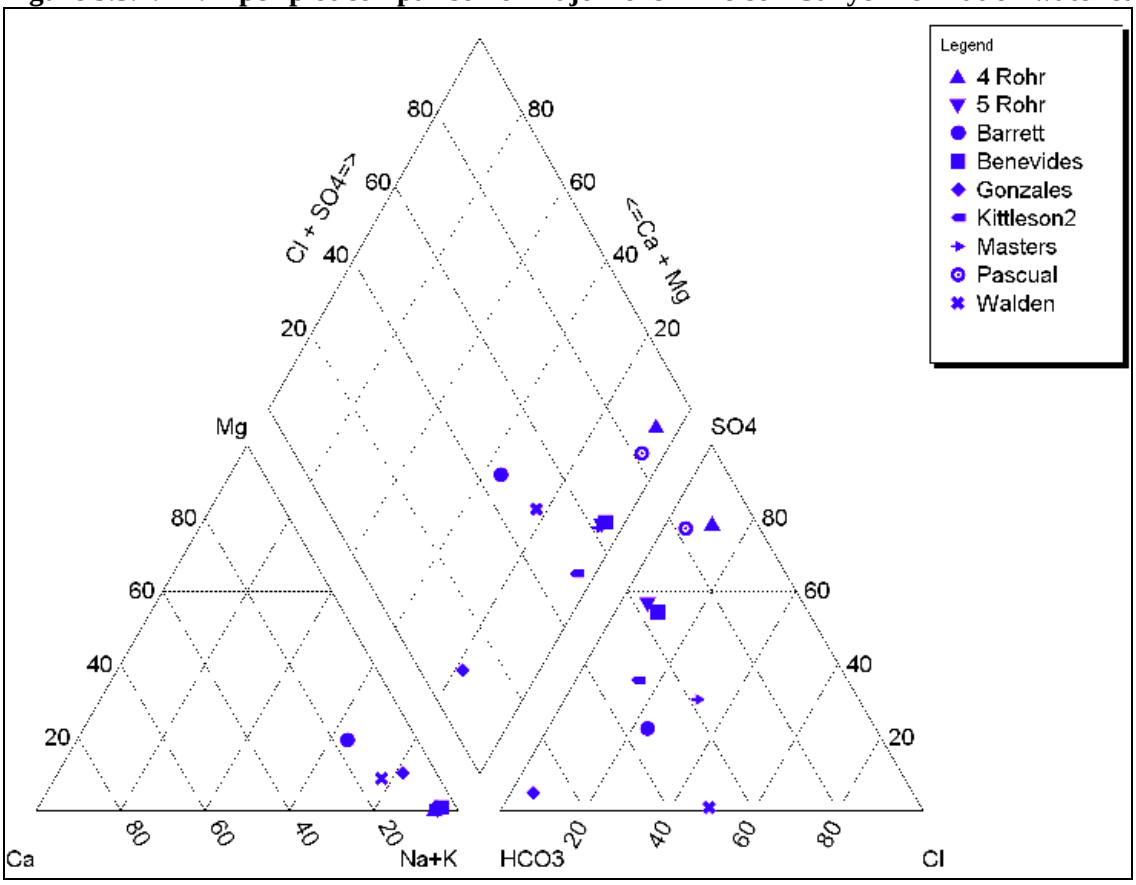
5.3.2.4 Major Anions and Cations Analysis

A piper plot is used to designate water types based on major anion and cation chemistry (Figure 5.3.2.4-1). The Barrett sample appears to have the most magnesium and calcium, while Gonzales and Walden have Mg and Ca concentration in between Barrett and the other samples. However, Gonzales appears to have an abnormally low amount of sulfate and high amount of bicarbonate compared to the other samples, resulting in a different overall water type. In addition, 4 Rohr and Pascual have similar water types, while Benevides, Masters, and 5 Rohr have extremely similar water types (Table 5.3.2.4-1). Only inj/rec wells were included in major ion and trace element analyses due to lack of data included in the domestic wells analyses. The different water types indicate that there are potentially separate sands that are isolated from one another with different water quality. Some of the sands may be connected and the screening over several sands results in a mixed water quality. The Walden well water may be a composite of water found at the Barrett and that from Benevides, Rohr 05, and Masters. Similarly, Benevides, Rohr 05, and Masters could be a composite of water found in Rohr 04 and Gonzales. However, it is inconclusive at this time and the overall trend based on water quality, production, and gas flow indicates a relatively disconnected aquifer system.

Table 5.3.2.4-1. Water types table assigned in AquaChem.

Station ID	Water type	Sample Date
Gonzales	Na-HCO3	7/17/2008
Walden	Na-HCO3-Cl	8/7/2008
Masters	Na-HCO3-Cl-SO4	7/29/2008
Kittleson2	Na-HCO3-SO4	8/4/2008
Barrett	Na-Mg-HCO3	7/10/2008
4 Rohr	Na-SO4	7/28/2008
Pascual	Na-SO4	7/31/2008
5 Rohr	Na-SO4-HCO3	7/15/2008
Benevides	Na-SO4-HCO3	7/24/2008

Figure 5.3.2.4-1. Piper plot comparison of major ions in Poison Canyon formation water samples.



5.3.2.5 Correlation Matrix and Principal Component Analysis

Although major ions are often used to classify water types, trace elements are used to understand the chemistry of environmental systems. The variance in concentrations between the trace elements amongst the different samples can be useful to identify patterns in the data. Principal component analysis (PCA) is a multivariate statistical analysis that analyzes the correlation matrix of the observed variables in order to simplify the data into a smaller set of independent variables or principal components. These principal components highlight the similarities and discrepancies in the data set to show relationships between the samples (variables) and amongst the constituents (observations). Observed variables and constituents are related by their independent influence on a particular factor (principal component) highlighted in the analysis. Although statistically there can be as many factors as observed variables input, the significance of a factor decreases after the first until its weight to the data set becomes negligible. For instance, in the analysis of the Poison Canyon data set only the first two or three factors have a significant impact on the water chemistry. The significance is decided by the user based on the absolute value of factor loadings (values approach zero as impact lowers). The following tables and figures summarize the PCA for Poison Canyon water chemistry.

Table 5.3.2.5-1. Correlation matrix of observed variables. Note: the closer a value is to unity, the more related the two samples.

Variables	Kittleson2	Barrett	Pascual	Gonzales	Benevides	4 Rohr	5 Rohr	Masters	Walden
Kittleson2	**1**	**0.887**	**0.972**	**0.905**	**0.995**	**0.961**	**0.994**	**0.997**	**0.896**
Barrett	**0.887**	**1**	**0.862**	**0.987**	**0.884**	**0.863**	**0.873**	**0.887**	**0.995**
Pascual	**0.972**	**0.862**	**1**	**0.854**	**0.989**	**0.998**	**0.990**	**0.977**	**0.866**
Gonzales	**0.905**	**0.987**	**0.854**	**1**	**0.893**	**0.850**	**0.882**	**0.897**	**0.989**
Benevides	**0.995**	**0.884**	**0.989**	**0.893**	**1**	**0.982**	**1.000**	**0.994**	**0.890**
4 Rohr	**0.961**	**0.863**	**0.998**	**0.850**	**0.982**	**1**	**0.983**	**0.967**	**0.866**
5 Rohr	**0.994**	**0.873**	**0.990**	**0.882**	**1.000**	**0.983**	**1**	**0.993**	**0.879**
Masters	**0.997**	**0.887**	**0.977**	**0.897**	**0.994**	**0.967**	**0.993**	**1**	**0.899**
Walden	**0.896**	**0.995**	**0.866**	**0.989**	**0.890**	**0.866**	**0.879**	**0.899**	**1**

Values in bold are significantly different from 0 with a significance level alpha=0.05

The correlation matrix (Table 5.3.2.5-1) displays which samples are most related and to what degree. For instance, Kittleson2 is most related to Masters (and visa-versa) although it also has a relatively high correlation with samples Benevides, and 5 Rohr (yellow match in Table 5.3.2.5-1). According to the PCA 5 Rohr and Benevides are essentially the same samples due their correlation of 1.0 which recognizes they display the same patterns in chemistry data (blue match in Table 5.3.2.5-1). The Barrett sample is most like Walden (and visa-versa) with a strong correlation to Gonzales. The Gonzales sample however, has the strongest link to the Barrett and Walden samples equally (purple match in Table 5.3.2.5-1). The Pascual and 4 Rohr samples have the strongest correlation to each other based on their overall chemistry data. The overall correlation between samples can also be compared in Figure 5.3.2.5-1. These results can be compared to the water type classifications above (Table 5.3.2.4-1) and prove to be very similar, with the exception of Barrett having a closer overall chemistry to the Gonzales and Walden well waters than apparent in the major ion chemistry.

Table 5.3.2.5-2. Contribution of the variables (%) to factors.

	F1	F2	F3	F4	F5	F6	F7	F8	F9
Kittleson2	11.491	2.666	22.830	0.151	0.848	1.597	0.004	60.169	0.245
Barrett	10.486	23.395	6.415	0.083	59.360	0.043	0.104	0.063	0.051
Pascual	11.236	8.564	15.019	0.195	0.242	49.113	0.198	0.253	15.181
Gonzales	10.542	22.157	5.694	28.124	11.762	2.629	16.338	2.424	0.331
Benevides	11.547	4.445	1.874	6.507	0.333	31.208	1.765	1.924	40.396
4 Rohr	11.134	7.905	32.799	0.131	3.732	14.072	13.430	4.338	12.459
5 Rohr	11.462	6.059	1.879	7.110	0.748	0.236	31.801	10.228	30.477
Masters	11.503	3.039	11.593	38.013	0.276	0.058	15.512	19.608	0.397
Walden	10.598	21.770	1.897	19.685	22.698	1.046	20.848	0.993	0.465

Figure 5.3.2.5-1. Plot of variables on factor 1 (F1) and factor 2 (F2) axes.

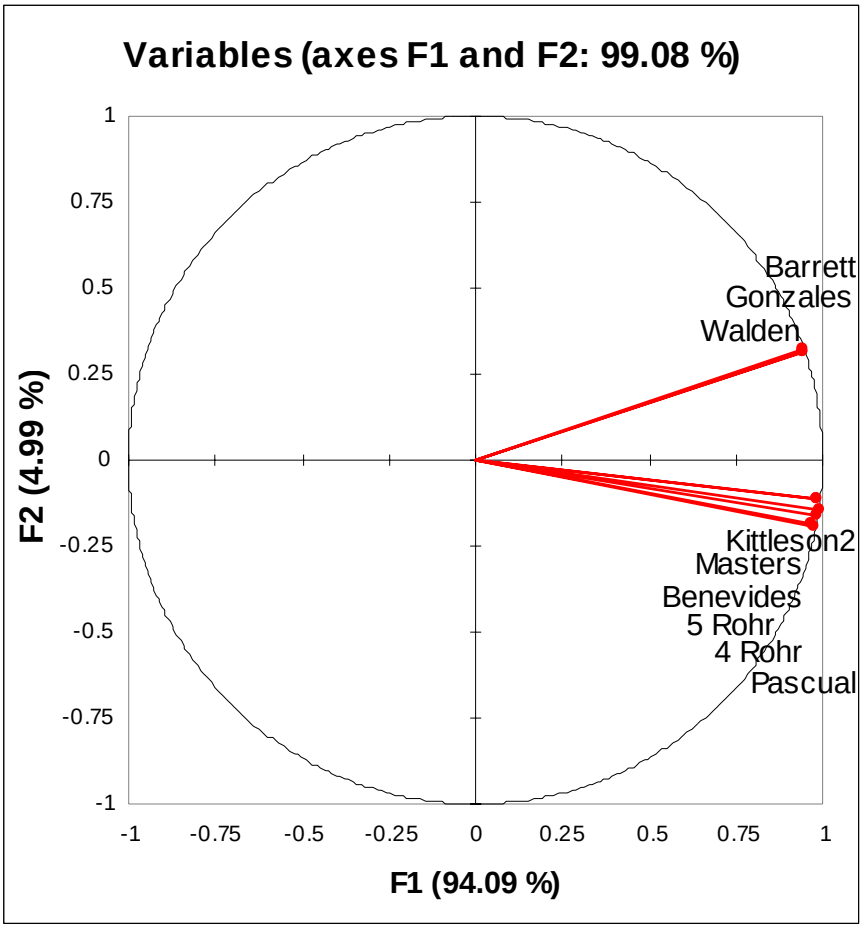


Table 5.3.2.5-3. Factor scores (correlation between constituents and factors).*

Observation	F1	F2	F3
Ag	-1.132	-0.015	0.018
As	-1.132	-0.015	0.018
At	-1.132	-0.015	0.018
B	-1.131	-0.015	0.018
Ba	-1.129	-0.011	0.018
Be	-1.132	-0.015	0.018
Br	-1.125	-0.015	0.017
Ca	-0.942	0.085	0.065
Cl	-0.566	0.060	-0.024
CO3	-0.719	0.083	-0.085
Conductivity	11.742	-2.106	-0.203
Cr	-1.132	-0.014	0.018
Cu	-1.132	-0.014	0.018
F	-0.958	0.034	0.012
Fe	-0.696	0.569	0.190
HCO3	1.229	0.299	-0.717
K	-1.090	0.028	0.025
Mg	-1.062	0.078	0.039
Mn	-1.125	-0.005	0.021
Mo	-1.132	-0.015	0.018
Na	1.494	-0.376	0.023
Ni	-1.132	-0.015	0.018
NO3	-1.132	-0.015	0.018
Pb	-1.132	-0.014	0.018
pH	-0.924	-0.022	-0.006
SAR	-0.864	-0.119	-0.024
Se	-1.132	-0.015	0.018
SO4	1.107	-1.444	0.783
Sr	-1.128	-0.013	0.019
TDS	9.833	2.664	0.430
Tot Alk	1.638	0.400	-0.819
Zn	-1.130	-0.013	0.019

Table 5.3.2.5-4. Contribution of the variables (%).*

	F1	F2	F3
Ag	0.473	0.002	0.016
As	0.473	0.002	0.016
At	0.473	0.002	0.016
B	0.472	0.002	0.015
Ba	0.470	0.001	0.016
Be	0.473	0.002	0.016
Br	0.467	0.001	0.014
Ca	0.327	0.050	0.206
Cl	0.118	0.025	0.028
CO3	0.191	0.048	0.351
Conductivity	50.877	30.855	1.982
Cr	0.473	0.001	0.016
Cu	0.473	0.001	0.016
F	0.339	0.008	0.007
Fe	0.179	2.250	1.726
HCO3	0.557	0.622	24.684
K	0.438	0.005	0.031
Mg	0.417	0.042	0.073
Mn	0.467	0.000	0.021
Mo	0.473	0.002	0.016
Na	0.823	0.986	0.025
Ni	0.473	0.001	0.016
NO3	0.473	0.002	0.015
Pb	0.473	0.001	0.016
pH	0.315	0.003	0.002
SAR	0.276	0.098	0.028
Se	0.473	0.002	0.016
SO4	0.453	14.499	29.469
Sr	0.469	0.001	0.017
TDS	35.681	49.370	8.889
Tot Alk	0.990	1.114	32.226
Zn	0.471	0.001	0.017

* Only factors 1-3 have been displayed due to the sharp cut-off in relevance after F2 to the overall chemistry.

Factor 1 accounts for 94.09% of variance in the data; however this factor actually seems to highlight the similarities between the samples. All of the samples contribute between 10-11% towards F1 (Table 5.3.2.5-2) and have the same positive values (magnitude) on the variables plot x-axis (Figure 5.3.2.5-1). This even contribution by each variable emphasizes the similarities in data between all the samples. The observations that contribute the most to F1 have the highest concentrations among the constituents and therefore have the greatest influence on the water chemistry of the well samples: Conductivity, TDS and total alkalinity. Factor 2 accounts for 4.99% of variance in the data, while factors 3-9 account for the remaining ~1%. Factor 2 seems to highlight the differences in data amongst the samples and has the greatest contribution from observations also included in F1 in addition to iron and sulfate (Tables 5.3.2.5-3 and 5.3.2.5-4). This variance between the constituents successfully separates the samples on the y-axis (Figure 5.3.2.5-1) and supports the correlation between variables given in the correlation matrix (Table 5.3.2.5-1).

5.3.2.6 Water Quality Summary

From the raw data, the validity of the pH field values has been questioned; the true pH values are assumed to be ~0.5 pH units less than the laboratory data resulting in an average pH for the Poison Canyon aquifer of approximately 8.5. All of the samples exceed the secondary standard permit level for iron and fluoride. In addition all samples exceed the higher drinking water standard for fluoride except for Benevides and 5 Rohr. A few of the samples also exceed the secondary standards for manganese, sulfate and TDS. Barrett and Walden have the highest concentrations for inorganic and organic constituents, sometimes by more than an order of magnitude. Although no sample exceeds the volatile organic class V UIC permit levels, Barrett and Walden well samples exceed the UIC inorganic permit levels for chromium (Barrett only), iron, lead, and manganese. In addition, Kittleson and Gonzales wells also exceed the UIC permit level for iron.

The first conclusion that can be postulated from the principal component analysis is that the entire well water sample set appears to have similar enough water chemistry as to be from the same overall aquifer. Within the aquifer there appears to be different sand beds (perched aquifers perhaps) that control the variability in the data set. Within the inorganic (including PCA and major ions analysis) and organic data analyses, Walden and Barrett wells have significantly different water chemistry (major and trace constituent analysis) from the others and draw a parallel with each other. Both of these wells have the lowest yields and during testing resulted in the lowest pumping rates and total volume purged suggesting (one or more) lower permeability and or very disconnected sands control water flow and chemistry for these wells. Zones in which Walden and Barrett have overlapping screen intervals in which no other well is open at those depths include approximately 10 feet between 507’ to 517’ and another approximately 10 feet between 560’ to 570’.

From the inorganic analysis it can be inferred Gonzales, Walden and Barrett have significantly different overall water chemistry from the rest of the water samples. This can be seen in the PCA trace element analysis as well as the unique correlation between the TDS and conductivity that only these waters have. The significance to this piece of evidence is the trace element analysis usually describes the history or characteristic trait of the environmental media (whether that be aqueous or atmospheric) by looking at the fine detail. In addition, the correlation between TDS and conductivity of these three wells has an above normal slope at 1.5 (Figure 5.3.2.2-1), while correlations are typically 0.55 to 0.75 (Freeze, A. and J. Cherry. 1979. Groundwater. Prentice-Hall, Inc. New Jersey), depending on the analytes in solution, which is closer to the other slope of 0.6.

The organic data and low pumping rates link Benevides with Walden and Barrett with no correlation to the Gonzales well. The lowest pumping rates are Walden, Barrett and Benevides, respectively (refer to Table 5.3.2.3-1), while the Barrett has the highest organic concentrations (refer to raw data Table 5.3.2.1-1). The origination of organic constituents is unknown at this time but is speculated to be a result of drilling and completion equipment and materials, such as lubricants and or pipe joint compound, in combination with poor purging due to low flow rates and significantly lower discharge volumes for all three wells. In support of the theory that the detected organic constituents are not naturally occurring in the aquifer system, principal component analysis indicates a correlation of unity between the inorganic chemistry of the Benevides sample and the 5 Rohr sample. 5 Rohr well organic constituents are all non-detect.

At no screened interval ranges are Walden, Barrett and Gonzales or Walden, Barrett and Benevides similarly open to the system. Walden overlaps with Gonzales for approximately 5 feet between 645’ to 650’. In addition, Barrett recovery well and Benevides injection well screen intervals overlap for approximately 20 feet between 538’ to 558’. The possible drilling and completion contamination that affects the organic chemistry could also potentially affect the trace element chemistry. However, the difference in observed patterns between the inorganic and organic data suggests there is a distinct factor affecting the inorganic trace chemistry independently.

There are several factors influencing the organic and inorganic chemistry. The incongruities all come down to the mismatch in patterns between the inorganic and organic data. Further information, such as more testing and purging of the wells is needed to determine if the trace organics and higher trace metals are associated with drilling and completion or an isolated portion of the formation that has been contaminated. The water quality of the Poison Canyon is currently assumed to be more closely represented by the highest yielding wells not Gonzales, Barrett, or Walden.

6 SUMMARY

The results of mitigation well testing provided permeability data that will be used in numerical modeling to predict gas removal and water and gas transport. The mitigation well testing data indicates that connectivity is limited for both gas and water and the sands within the Poison Canyon Formation are discrete disconnected sands separated by low permeability zones. Additionally, some of the sands themselves are associated with low permeability. The calculated permeability data spans three orders of magnitude that reflect the variability in connectivity and lithology. The pumping of recovery wells results in increased gas production within the pumped well with no observed response in other mitigation wells. The increase in gas flow as water pressure decreases supports the use of a hydraulic barrier to prevent gas migration. At no time during the testing did nearby monitored domestic wells indicate an increase in gas production. Water quality data supports that sands within the Poison Canyon Formation are discontinuous and that water in the sands is highly variable and of limited use with several constituents exceeding regulatory standards.

APPENDIX A

Aquifer Testing and Field Pumping Data

Well ID: Rec 1 Kittleson

12 hr Pump Test - 2nd

Static Water Level: 494.57' | **Stick-Up from Survey Point: 2.67'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
8/4/08	14:01	28.1	52	49				
8/4/08	14:02	27.2	75	50				
8/4/08	14:03	26.4	99	48				
8/4/08	14:04	26.5	129	47				
8/4/08	14:05	25.7	157	48				
8/4/08	14:06	25.5	183	42				
8/4/08	14:07	25.2	212	43				
8/4/08	14:08	25.2	239	45				
8/4/08	14:10	25.0	282	45				
8/4/08	14:11	25.0	307	46				
8/4/08	14:12	24.9	341	46				
8/4/08	14:14	25.7	389	38				
8/4/08	14:15	25.8	414	37				
8/4/08	14:16	25.7	439	31				
8/4/08	14:17	25.5	462	34				
8/4/08	14:18	25.4	482	34				
8/4/08	14:19	25.1	507	39				
8/4/08	14:20	25.0	537	42				
8/4/08	14:21	24.9	563	42				
8/4/08	14:22	24.9	593	39				
8/4/08	14:24	25.0	633	37				
8/4/08	14:25	24.9	658	37				
8/4/08	14:26	25.0	693	32				
8/4/08	14:27	24.8	715	33				
8/4/08	14:28	24.9	741	33				
8/4/08	14:29	25.0	757	30				
8/4/08	14:30	25.0	780	30				
8/4/08	14:31	25.0	811	29				
8/4/08	14:32	25.0	833	30				
8/4/08	14:33	25.0	857	30				
8/4/08	14:34	25.1	881	29				
8/4/08	14:35	25.1	909	29	20.0	8.16	408	
8/4/08	15:05	25.1	1745	30	19.1	7.38	419	
8/4/08	15:35	25.1	2530	31	18.8	6.98	438	
8/4/08	16:05	25.0	3138	30	19.1	6.85	453	
8/4/08	16:35	25.0	3984	30	18.8	6.75	466	
8/4/08	17:05	25.0	4651	30	18.5	6.91	474	
8/4/08	18:05	25.0	6255	30	18.5	6.03	488	
8/4/08	19:05	25.0	7728	30	18.2	6.26	498	
8/4/08	20:05	25.0	9306	30	18.2	6.21	509	
8/4/08	21:35	25.1	11532	32	18.2	6.51	518	
8/4/08	23:00	25.2	13796	31	18.2	6.38	520	
8/4/08	2:00	25.2	18635	32	18.2	6.27	525	

NORWEST
Applied Hydrology

Well ID: Rec 3 PEI
12 hr Pump Test
Static Water Level: 419.32' **Stick-Up from Survey Point:2.37'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
8/25/08	8:08	3.8	6	390				
8/25/08	8:09	4.1	10	382				
8/25/08	8:10	4.3	14	382				
8/25/08	8:11	3.3	18	391				
8/25/08	8:12	3.5	22	387				
8/25/08	8:13	4.2	26	381				
8/25/08	8:14	4.2	29	380				
8/25/08	8:15	3.8	33	381				
8/25/08	8:16	3.9	38	382				
8/25/08	8:17	3.1	41	388				
8/25/08	8:18	3.4	46	383				
8/25/08	8:19	2.8	49	391				
8/25/08	8:20	2.7	52	390				
8/25/08	8:21	2.8	56	390				
8/25/08	8:22	2.7		391				
8/25/08	8:23	2.7	60	390				
8/25/08	8:24	2.7	61	390				
8/25/08	8:25	2.7	63	390				
8/25/08	8:26	2.7	67	390				
8/25/08	8:27	2.7	69	389				
8/25/08	8:28	2.8	72	388				
8/25/08	8:29	2.7	74	388				
8/25/08	8:30	2.7	77	386				
8/25/08	8:31	2.6	80	387				
8/25/08	8:32	2.6	83	383				
8/25/08	8:33	2.6	86	382				
8/25/08	8:34	2.7	88	382				
8/25/08	8:35	2.6	92	382				
8/25/08	8:36	2.5	94	382				
8/25/08	8:37	2.7	97	381				
8/25/08	8:38	2.6	99	382				
8/25/08	8:39	2.6	102	382				
8/25/08	8:40	2.6	105	382				
8/25/08	8:41	2.6	107	382				
8/25/08	8:42	2.6	109	380				
8/25/08	9:15	2.4	190	380	20.9	4.38	366	
8/25/08	9:45	2.1	256	380	20.6	5.03	373	
8/25/08	10:00	1.7	290	380				
8/25/08	10:12	1.6	307	380				
8/25/08	10:15	1.8	311	380	21.3	5.37	379	
8/25/08	10:30	1.6	336	379				
8/25/08	10:45	1.6	358	379	22.0	7.60	382	
8/25/08	11:20	1.3	418	379	23.1	6.01	388	
8/25/08	11:30	1.4	426	379				
8/25/08	11:55	1.3	469	378				
8/25/08	12:05	1.4	480	375				
8/25/08	12:20	1.4	497	375				
8/25/08	12:35	1.4	514	375				
8/25/08	12:50	1.4	532	375				
8/25/08	13:05	1.4	541	373	24.6	6.21	392	
8/25/08	13:35	1.3	601	372	25.8	6.95	395	
8/25/08	14:05	1.3	631	372	26.7	6.45	398	
8/25/08	14:35	1.2	667	374	27.1	6.25	400	
8/25/08	15:05	1.2	708	373	26.0	6.26	400	
8/25/08	15:35	1.2	733	372	26.6	6.36	401	
8/25/08	16:05	1.2	769	375	22.4	6.44	432	
8/25/08	16:35	1.2	804	376	22.4	6.33	434	
8/25/08	17:05	1.2	837	374	22.0	6.27	434	
8/25/08	18:05	1.1	904	373	22.0	6.03	434	
8/25/08	19:05	1.1	973	370	21.8	5.71	435	
8/25/08	20:05	1.2	1044	373	21.3	5.87	434	

NORWEST
Applied Hydrology

Well ID: Rec 4 Barrett

12 hr Pump Test

Static Water Level: 385.32' | **Stick-Up from Survey Point: 3.0'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
7/10/08	9:54	0.3	60	171				
7/10/08	9:55	0.4	61	170				
7/10/08	9:56	0.4	61	170				
7/10/08	9:57	0.4	61	170				
7/10/08	9:58	0.4	62	170				
7/10/08	9:59	0.5	62	170				
7/10/08	10:00	0.5	63	170				
7/10/08	10:01	0.5	63	170				
7/10/08	10:02	0.5	64	170				
7/10/08	10:03	0.5	64	170				
7/10/08	10:04	0.5	65	170				
7/10/08	10:05	0.5	65	169				
7/10/08	10:06	0.5	66	169				
7/10/08	10:07	0.6	66	169				
7/10/08	10:08	0.5	67	168				
7/10/08	10:09	0.6	67	168				
7/10/08	10:10	0.5	68	168				
7/10/08	10:11	0.5	69	168				
7/10/08	10:12	0.5	69	168				
7/10/08	10:13	0.5	70	166				
7/10/08	10:14	0.5	70	166				
7/10/08	10:15	0.5	71	166				
7/10/08	10:16	0.5	71	166				
7/10/08	10:17	0.5	72	166				
7/10/08	10:18	0.4	72	166				
7/10/08	10:19	0.6	73	166				
7/10/08	10:20	0.5	73	166				
7/10/08	10:21	0.5	74	166				
7/10/08	10:22	0.5	74	166				
7/10/08	10:23	0.3	75	166				
7/10/08	10:24	0.5	75	165				
7/10/08	10:25	0.4	75	165				
7/10/08	10:26	0.5	76	165				
7/10/08	10:27	0.5	76	165				
7/10/08	10:28	0.5	77	165				
7/10/08	10:34				20.8	9.29	502	gray, opaque water
7/10/08	10:36	0.4	81	165				
7/10/08	11:06	0.4	95	165	22.0	9.01	492	water same appearance
7/10/08	11:36	0.3	107	157	23.7	8.88	476	water same appearance
7/10/08	12:06	0.5	120	155	24.7	8.87	447	water same appearance
7/10/08	12:36	0.5	133	151	24.7	8.90	442	water same appearance
7/10/08	13:06	0.3	144	150	25.8	8.89	438	water same appearance
7/10/08	13:36	0.4	154	149	26.3	8.89	435	water gray, murky
7/10/08	14:06	0.4	165	145	26.9	8.82	429	about the same as 1336
7/10/08	14:50	0.2	177	139	27.3	8.83	431	about the same as 1337

Well ID: Inj 01 Pascual

12 hr Pump Test

Static Water Level: 410.0' | **Stick-Up from Survey Point: 2.38'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
7/31/08	7:51	2.2	1	162				
7/31/08	7:52	2.2	4	162				
7/31/08	7:53	2.2	5	162				
7/31/08	7:54	2.2	6	161				
7/31/08	7:55	2.2	8	160				
7/31/08	7:56	2.2	11	160				
7/31/08	7:57	2.2	14	160				
7/31/08	7:58	2.2	17	160				
7/31/08	7:59	2.2	17	159				
7/31/08	8:00	2.1	20	159				
7/31/08	8:01	2.1	22	156				
7/31/08	8:02	2.1	23	157				
7/31/08	8:03	2.1	26	155				
7/31/08	8:04	2.1	29	155				
7/31/08	8:05	2.1	31	154				
7/31/08	8:06	2.1	32	153				
7/31/08	8:07	2.1	35	153				
7/31/08	8:08	2.1	37	152				
7/31/08	8:09	2.1	39	152				
7/31/08	8:10	2.1	41	152				
7/31/08	8:11	2.1	44	151				
7/31/08	8:12	2.1	45	151				
7/31/08	8:13	2.1	48	151				
7/31/08	8:14	2.1	50	151				
7/31/08	8:15	2.1	52	151				
7/31/08	8:16	2.1	53	151				
7/31/08	8:17	2.1	55	151				
7/31/08	8:18	2.1	57	151				
7/31/08	8:19	2.1	59	151				
7/31/08	8:20	2.1	61	151				
7/31/08	8:21	2.1	64	151				
7/31/08	8:51	2.1	139	148	17.9	6.80	658	
7/31/08	9:21	2.1	185	144	18.3	6.43	661	
7/31/08	9:51	2.0	246	142	18.4	6.55	670	
7/31/08	10:21	2.0	308	140	18.9	6.61	672	
7/31/08	11:21	2.0	425	139	19.3	6.47	671	
7/31/08	12:21	2.0	550	135	19.8	6.54	673	
7/31/08	13:21	2.0	667	133	19.8	6.63	673	
7/31/08	14:21	2.0	786	132	19.7	6.60	670	
7/31/08	15:21	2.0	902	131	19.9	6.61	675	
7/31/08	16:21	1.9	1014	130	19.3	6.57	676	
7/31/08	17:21	2.0	1136	131	18.9	7.08	676	
7/31/08	18:21	1.9	1253	131	18.8	7.20	676	
7/31/08	19:21	2.0	1372	131	18.8	6.78	676	
7/31/08	19:51	2.0	1435	131	18.4	6.72	677	

NORWEST
Applied Hydrology

Well ID: Inj 02 Gonzales

12 hr Pump Test

Static Water Level: 309.15' | **Stick-Up from Survey Point:2.38'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
8/20/08	8:25	2.8	8	215				
8/20/08	8:26	2.4	11	220				
8/20/08	8:27	2.5	14	215				
8/20/08	8:28	2.4	16	216				
8/20/08	8:29	2.4	19	214				
8/20/08	8:30	2.4	21	214				
8/20/08	8:31	2.4	24	214				
8/20/08	8:32	2.4	25	214				
8/20/08	8:33	2.4	29	214				
8/20/08	8:34	2.4	31	214				
8/20/08	8:35	2.5	33	210				
8/20/08	8:36	2.4	35	211				
8/20/08	8:37	2.4	37	211				
8/20/08	8:38	2.5	42	210				
8/20/08	8:39	2.7	44	210				
8/20/08	8:40	2.5	46	209				
8/20/08	8:41	2.5	47	209				
8/20/08	8:42	2.6	49	206				
8/20/08	8:43	2.5	52	207				
8/20/08	8:44	2.4	54	208				
8/20/08	8:45	2.4	57	209				
8/20/08	8:46	2.5	60	205				
8/20/08	8:47	2.4	61	206				
8/20/08	8:48	2.4	64	206				
8/20/08	8:50	2.4	69	205				
8/20/08	8:51	2.4	70	205				
8/20/08	8:52	2.4	75	206				
8/20/08	8:53	2.4	76	205				
8/20/08	8:54	2.4	80	205				
8/20/08	8:55	2.5	82	204				
8/20/08	8:56	2.5	84	204				
8/20/08	8:57	2.4	87	204				
8/20/08	8:58	2.4	89	204				
8/20/08	8:59	2.4	92	204				
8/20/08	9:30	2.4	167	191	18.4	6.28	545	
8/20/08	10:20	2.5	289	190	19.8	6.63	539	
8/20/08	10:50	2.5	368	186	20.2	6.37	536	
8/20/08	11:20	2.4	444	187	21.1	6.70	524	
8/20/08	11:50	2.5	510	184	20.8	7.40	527	
8/20/08	12:50	2.5	674	180	22.8	6.55	517	
8/20/08	13:50	2.4	820	178	22.7	6.51	518	
8/20/08	15:00	2.5	980	177	20.8	6.49	507	
8/20/08	16:00	2.6	1180	174	21.4	6.37	498	
8/20/08	17:00	2.5	1257	173	20.9	6.57	498	
8/20/08	18:00	2.4	1427	175	20.2	6.77	495	
8/20/08	19:30	2.5	1652	173				

NORWEST
Applied Hydrology

Well ID: Inj 03 Benevides

12 hr Pump Test

Static Water Level: 425.13' | **Stick-Up from Survey Point:**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
7/17/08	7:00	0.6	1	205				
7/17/08	7:02	0.6	2	205				
7/17/08	7:03	0.7	2	205				
7/17/08	7:04	0.9	3	201				
7/17/08	7:05	0.9	4	201				
7/17/08	7:06	0.8	5	203				
7/17/08	7:07	0.8	6	200				
7/17/08	7:08	0.9	6	199				
7/17/08	7:09	0.7	8	199				
7/17/08	7:10	1.0	9	197				
7/17/08	7:11	0.9	10	197				
7/17/08	7:12	0.8	11	196				
7/17/08	7:13	0.9	11	196				
7/17/08	7:14	0.9	12	196				
7/17/08	7:15	0.9	13	196				
7/17/08	7:16	0.8	14	195				
7/17/08	7:17	0.8	15	195				
7/17/08	7:18	0.9	16	195				
7/17/08	7:19	0.8	16	194				
7/17/08	7:20	0.8	17	194				
7/17/08	7:21	0.9	18	194				
7/17/08	7:22	0.9	19	193				
7/17/08	7:23	0.9	20	193				
7/17/08	7:24	0.8	21	191				
7/17/08	7:25	0.8	21	191				
7/17/08	7:26	0.8	22	191				
7/17/08	7:27	1.0	23	190				
7/17/08	7:28	0.9	25	191				
7/17/08	7:29	0.9	26	191				
7/17/08	7:30	0.9	27	190				
7/17/08	7:31	0.9	27	191				
7/17/08	7:32	0.9	29	190				
7/17/08	7:33	0.9	30	189				
7/17/08	7:34	0.9	31	189				
7/17/08	7:35	0.9	32	190				
7/17/08	8:00	0.8	56	185				
7/17/08	8:30	0.8	77	182	18.7	4.87	759	
7/17/08	9:05	0.8	106	179				
7/17/08	9:30	0.8	178	175	20.6	9.09	742	
7/17/08	10:05	0.8	156	175				
7/17/08	10:30	0.8	176	174	21.5	7.58	740	
7/17/08	11:30	0.8	232	171				
7/17/08	12:30	0.9	272	169	22.2	6.32	737	
7/17/08	13:30	1.0	330	165				
7/17/08	14:30	1.3	394	153	21.5	6.96	731	
7/17/08	15:30	1.3	463	150				
7/17/08	16:30	1.4	552	140				
7/17/08	17:30	1.4	628	138				

Well ID: Inj 04 Rohr

12 hr Pump Test - 3rd

Static Water Level: 421.3' | **Stick-Up from Survey Point: 2.38'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
7/23/08	13:53	16.6	20	130				
7/23/08	13:54	16.2	45	126				
7/23/08	13:55	16.1	68	120				
7/23/08	13:56	16.5	85	121				
7/23/08	13:57	15.9	106	120				
7/23/08	13:58	16.2	122	119				
7/23/08	13:59	16.2	136	118				
7/23/08	14:00	16.4	158	116				
7/23/08	14:01	16.2	172	112				
7/23/08	14:02	17.6	196	112				
7/23/08	14:03	16.2	213	111				
7/23/08	14:04	16.2	225	111				
7/23/08	14:05	16.1	243	110				
7/23/08	14:06	16.1	252	110				
7/23/08	14:07	16.1	270	110				
7/23/08	14:08	16.1	286	110				
7/23/08	14:09	16.1	301	110				
7/23/08	14:10	16.1	319	110				
7/23/08	14:11	16.0	334	110				
7/23/08	14:12	16.0	350	109				
7/23/08	14:13	16.0	364	109				
7/23/08	14:14	16.1	384	109				
7/23/08	14:15	16.0	400	109				
7/23/08	14:16	15.9	415	108				
7/23/08	14:17	16.1	430	109				
7/23/08	14:18	16.0	447	109				
7/23/08	14:19	16.0	463	109				
7/23/08	14:20	16.1	479	108				
7/23/08	14:21	16.1	496	105				
7/23/08	14:22	16.1	512	105				
7/23/08	14:23	16.1	527	105				
7/23/08	14:24	16.1	545	105				
7/23/08	14:25	15.9	561	105				
7/23/08	14:26	16.1	576	106				
7/23/08	14:27	16.1	593	106	21.1	6.94	842	
7/23/08	15:00	16.0	1053	101	19.6	6.41	849	
7/23/08	15:30	16.0	1596	100	19.8	6.44	835	
7/23/08	16:00	15.9	2073	100	19.4	6.14	828	
7/23/08	16:30	16.1	2561	100	18.6	6.44	826	
7/23/08	17:00	16.1	3035	100	18.2	6.14	827	
7/23/08	17:30	16.1	3500	100	18.0	6.47	825	
7/23/08	18:00	16.1	4021	100	17.7	6.39	821	
7/23/08	18:30	16.1	4484	100	17.5	5.89	819	
7/23/08	19:00	16.1	4871	100	17.5	5.68	818	
7/23/08	19:30	16.1	5498	100	17.6	6.05	816	
7/23/08	20:00	16.1	6423	100	17.6	6.25	811	
7/23/08	21:30	16.1	7387	99	17.5	6.35	808	
7/23/08	23:00	16.0	8929	98	17.5	6.24	805	
7/24/08	0:30	16.1	10297	97	17.5	6.21	804	
7/24/08	2:00	16.1	11756	93	17.6	6.19	803	

NORWEST
Applied Hydrology

Well ID: Inj 05 Rohr

12 hr Pump Test

Static Water Level: 440.80' | **Stick-Up from Survey Point: 2.38'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
7/28/08	9:43	0.0	0	0				
7/28/08	9:45	13.7	3	129				
7/28/08	9:46	13.3	11	132				
7/28/08	9:47	13.1	24	132				
7/28/08	9:48	12.9	36	139				
7/28/08	9:49	12.9	47	138				
7/28/08	9:50	12.8	56	142				
7/28/08	9:51	12.0	77	168				
7/28/08	9:52	13.8	94	100				
7/28/08	9:53	13.3	104	113				
7/28/08	9:54	13.3	113	117				
7/28/08	9:55	12.6	126	140				
7/28/08	9:56	13.3	137	115				
7/28/08	9:57	13.0	148	122				
7/28/08	9:58	12.9	163	126				
7/28/08	9:59	12.9	177	129				
7/28/08	10:00	13.7	186	98				
7/28/08	10:01	13.5	205	105				
7/28/08	10:02	13.3	216	110				
7/28/08	10:03	13.3	227	110				
7/28/08	10:04	13.1	244	111				
7/28/08	10:05	13.2	262	112				
7/28/08	10:06	13.3	268	113				
7/28/08	10:07	13.1	285	110				
7/28/08	10:08	13.3	298	111				
7/28/08	10:09	13.1	313	112				
7/28/08	10:10							
7/28/08	10:11	13.1	338	118				
7/28/08	10:12	13.0	347	119				
7/28/08	10:13	13.5	365	110				
7/28/08	10:14	13.1	375	114				
7/28/08	10:15	13.0	388	117				
7/28/08	10:16	13.0	405	120				
7/28/08	10:17	13.3	416	108				
7/28/08	10:18	13.2	426	109				
7/28/08	10:20	13.1	457	114	21.0	6.53	587	
7/28/08	11:04	12.7	1049	129	20.5	7.15	563	
7/28/08	11:37							
7/28/08	12:07	12.6	1732	130	19.6	7.14	650	
7/28/08	13:07	13.4	2657	100	19.1	6.53	568	
7/28/08	14:07	13.9	3484	81	18.3	7.37	566	
7/28/08	15:07	14.0	4318	69	18.2	6.86	568	
7/28/08	16:07	14.2	5140	70	17.7	6.69	568	
7/28/08	17:07	14.6	6020	52	17.1	6.46	568	
7/28/08	18:07	14.0	6867	48	17.3	6.44	575	
7/28/08	19:07	14.7	7724	32	17.4	6.48	577	
7/28/08	20:07	14.6	8611	49	17.3	6.52	577	
7/28/08	21:07	14.4	9471	58	17.0	6.46	577	
7/28/08	21:35	14.6	9883	45	17.0	6.45	578	

NORWEST
Applied Hydrology

Well ID: Inj 06 Masters

12 hr Pump Test

Static Water Level: **Stick-Up from Survey Point: 2.13'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
7/15/08	6:51	2.8	0	400				
7/15/08	6:52	4.5	7	340				
7/15/08	6:57	3.7	25	350				
7/15/08	6:58	3.4	27	350				
7/15/08	6:59	4.6	34	340				
7/15/08	7:00	4.0	36	343				
7/15/08	7:01	4.3	41	343				
7/15/08	7:02	3.9	45	343				
7/15/08	7:03	5.8	489	338				
7/15/08	7:04	3.9	53	341				
7/15/08	7:05	3.8	56	343				
7/15/08	7:06	3.2	61	350				
7/15/08	7:07	4.0	64	341				
7/15/08	7:08	4.2	68	339				
7/15/08	7:09	3.9	72	342				
7/15/08	7:10	4.4	79	338				
7/15/08	7:11	4.3	80	337				
7/15/08	7:12	3.9	85	340				
7/15/08	7:13	4.4	89	337				
7/15/08	7:14	4.2	93	338				
7/15/08	7:15	4.1	96	338				
7/15/08	7:16	3.9	103	339				
7/15/08	7:17	3.9	106	339				
7/15/08	7:18	6.7	111	341				
7/15/08	7:19	4.5	115	337				
7/15/08	7:20	3.9	119	339				
7/15/08	7:21	4.6	124	330				
7/15/08	7:22	4.4	128	337				
7/15/08	7:23	4.4	133	338				
7/15/08	7:24	4.2	137	338				
7/15/08	7:25	4.1	141	338				
7/15/08	7:55	4.0	292	338				
7/15/08	8:25	3.2	372	339	20.6	7.82	414	
7/15/08	8:55	3.7	507	322	21.5	8.50	410	
7/15/08	9:25	4.7	629	318	21.3	6.05	404	
7/15/08	10:05	4.0	159	348	21.8	6.37	410	
7/15/08	10:55	4.0	1011	309	22.0	6.84	418	
7/15/08	12:55	3.9	1439	317				
7/15/08	13:55	5.0	1755	299				difficulty maintaining constant discharge
7/15/08	14:55	5.3	2079	295				
7/15/08	15:55	5.3	2402	267				
7/15/08	16:55	5.3	2704	255	21.4	9.75	452	
7/15/08	17:55	5.1	3077	257	20.2	6.11	449	
7/15/08	18:55	5.3	3329	248	20.1	6.22	458	

NORWEST
Applied Hydrology

Well ID: Inj 07 Walden

12 hr Pump Test

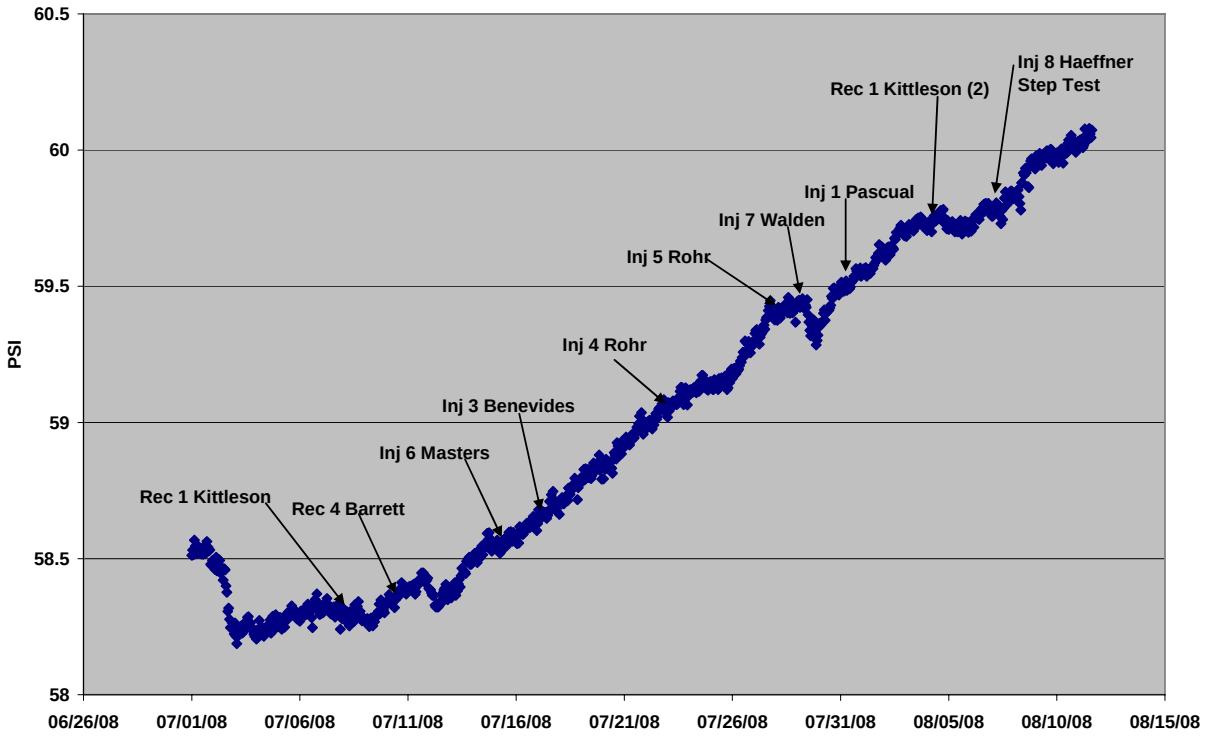
Static Water Level: 410.0' | **Stick-Up from Survey Point: 2.38'**

Date	Time	Water Discharge Rate (gpm)	Total Discharge (gal)	Well Head Pressure (psi)	Temp (deg C)	pH	SpC (µs/cm)	Comments
7/29/08	9:15	0.0	0.00	150.00				
7/29/08	9:17	0.7	0.90	140.00				
7/29/08	9:18	0.7	1	140				
7/29/08	9:19	0.3	2	140				
7/29/08	9:20	0.3	2	140				
7/29/08	9:21	0.7	3	138				
7/29/08	9:22	0.6	4	140				
7/29/08	9:23	0.3	4	140				
7/29/08	9:24	0.3	4	140				
7/29/08	9:25	0.3	5	140				
7/29/08	9:26	0.2	5	140				
7/29/08	9:27	0.7	5	138				
7/29/08	9:28	0.2	6	139				
7/29/08	9:29	0.2	6	140				
7/29/08	9:30	0.2	6	139				
7/29/08	9:31	0.2	6	139				
7/29/08	9:32	0.2	6	139				
7/29/08	9:33	0.2	7	139				
7/29/08	9:34	0.2	7	139				
7/29/08	9:35	0.2	7	138				
7/29/08	9:36	0.5	8	137				
7/29/08	9:37	0.5	8	137				
7/29/08	9:38	0.3	8	134				
7/29/08	9:39	0.3	9	135				
7/29/08	9:40	0.3	9	133				
7/29/08	9:41	0.3	9	132				
7/29/08	9:42	0.3	10	132				
7/29/08	9:43	0.3	10	132				
7/29/08	9:44	0.3	10	132				
7/29/08	9:45	0.3	11	131				
7/29/08	9:46	0.3	11	131				
7/29/08	9:47	0.3	11	131				
7/29/08	9:48	0.3	12	131				
7/29/08	9:49	0.3	12	131				
7/29/08	9:50	0.3	12	131				
7/29/08	10:20	0.2	26	129	18.9	6.51	455	
7/29/08	10:50	0.2	33	122	19.9	6.50	457	
7/29/08	11:20	0.2	40	122	20.5	6.40	456	
7/29/08	11:50	0.1	45	119	21.0	6.37	466	
7/29/08	12:50	0.1	53	111	21.4	6.40	450	
7/29/08	13:50	0.1	62	100	22.0	6.34	457	
7/29/08	14:50	0.1	69	100	19.4	6.43	457	
7/29/08	15:15	0.1	70	93	22.3	6.41	461	

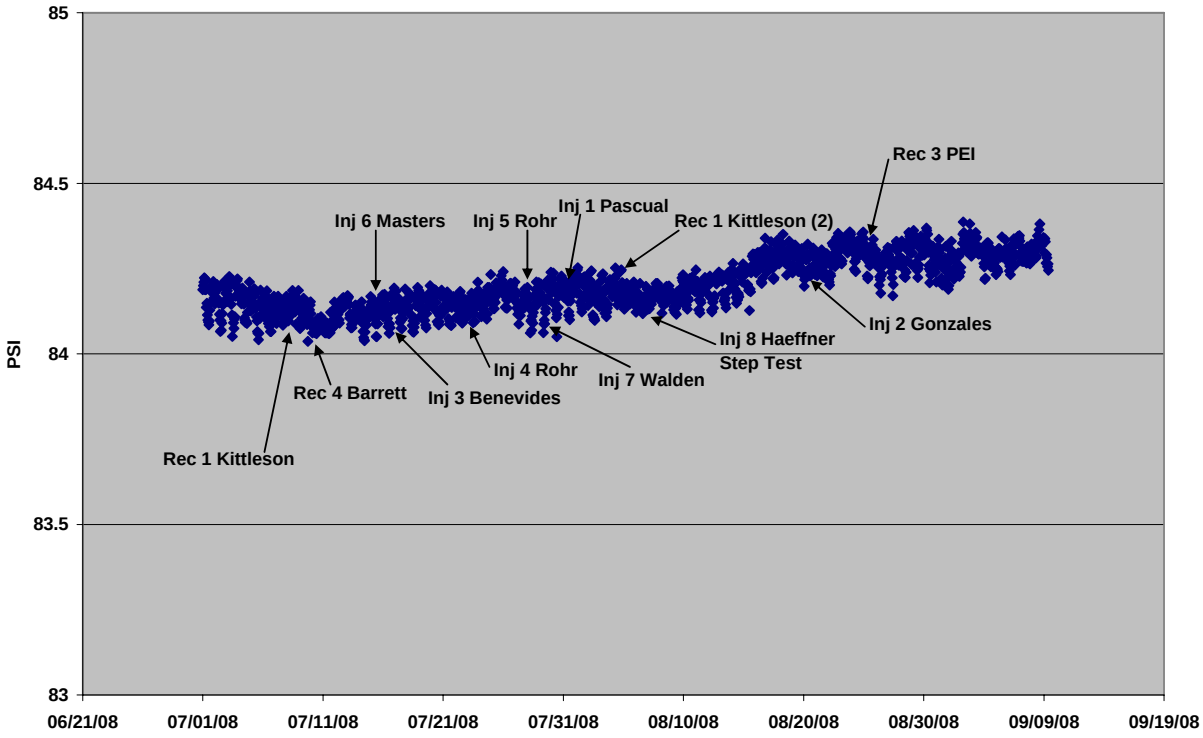
APPENDIX B

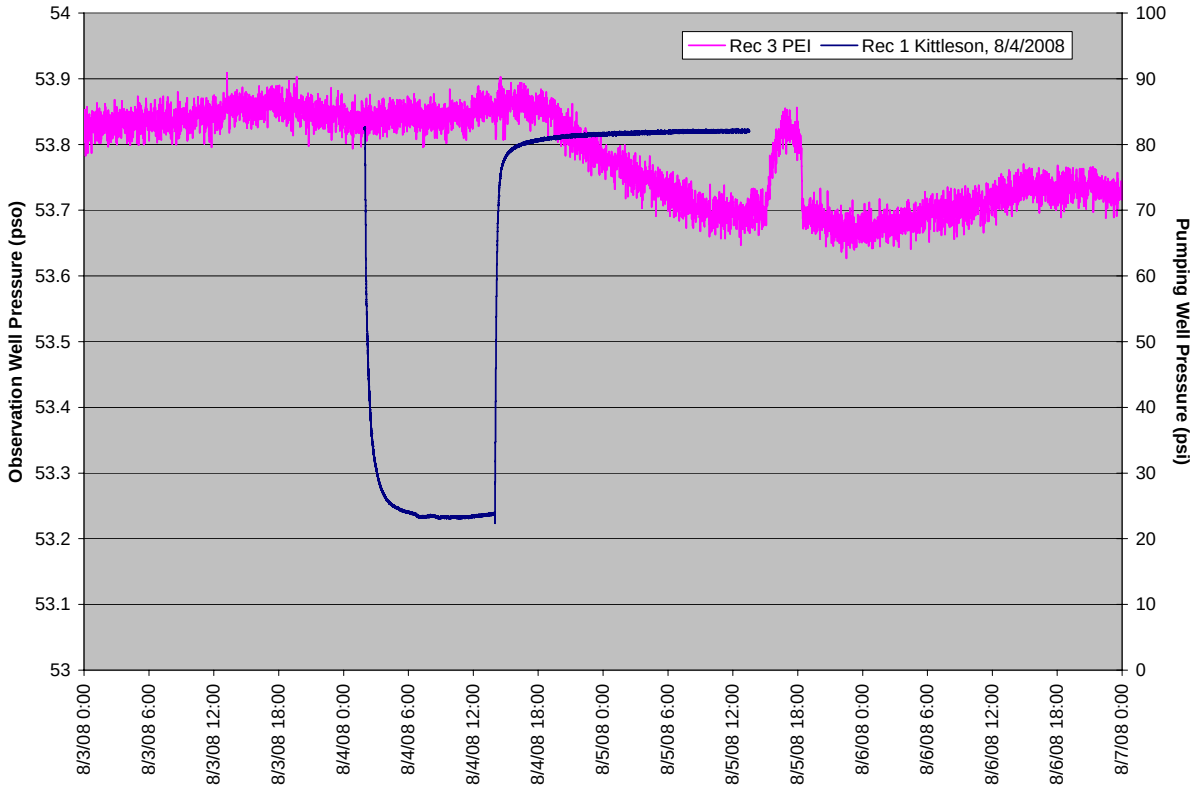
Water Pressure Analysis Figures

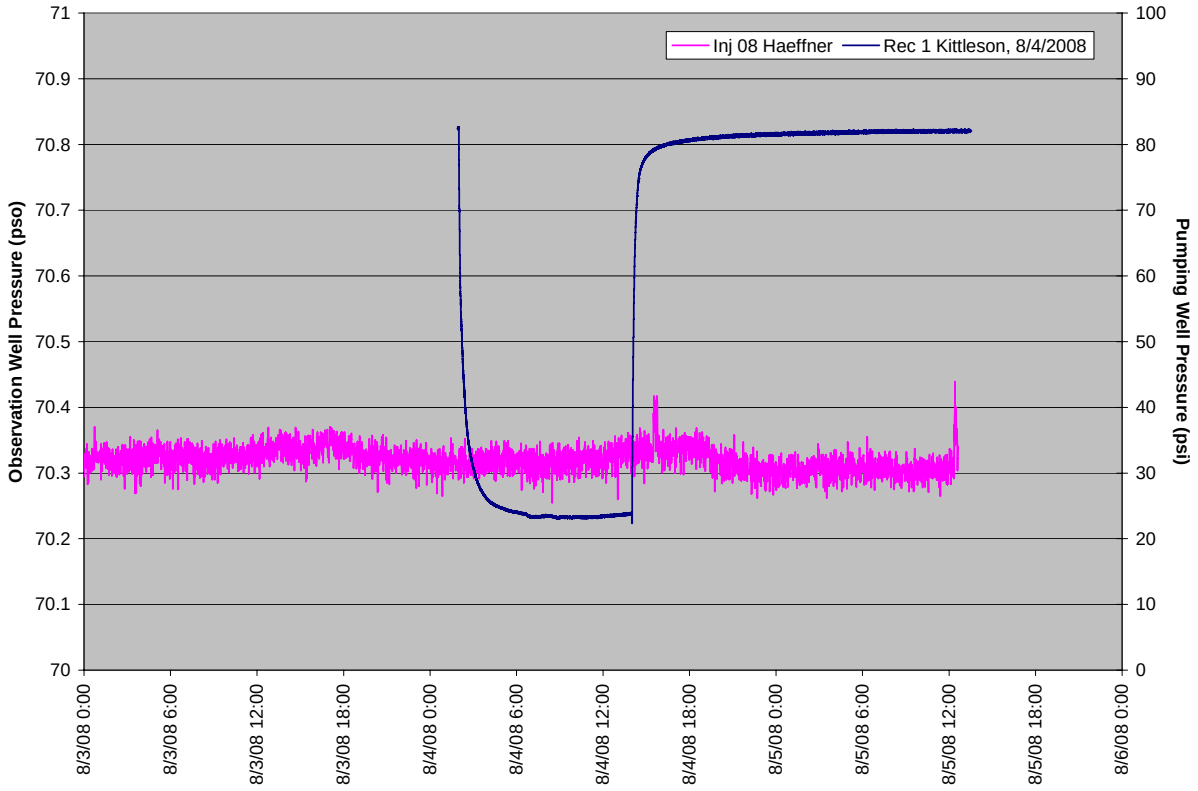
POCI 55 Monitor Well Upper Zone Fluid Pressure

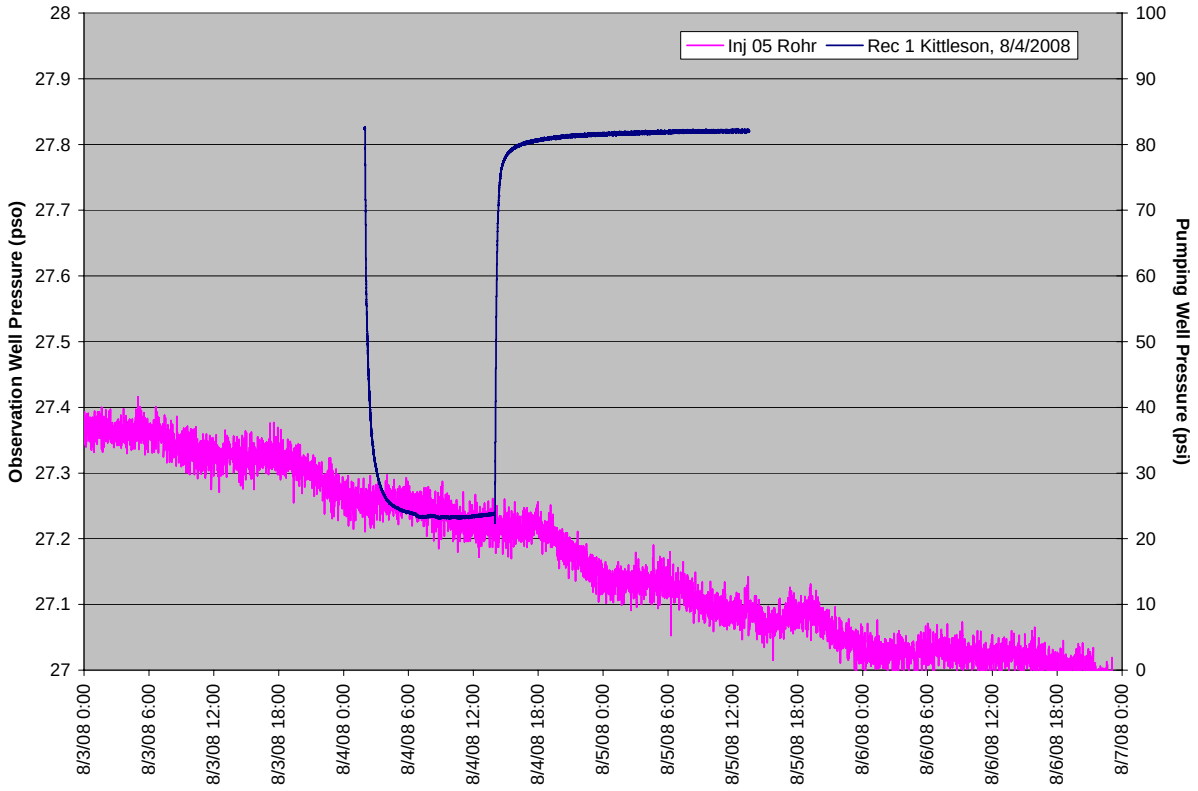


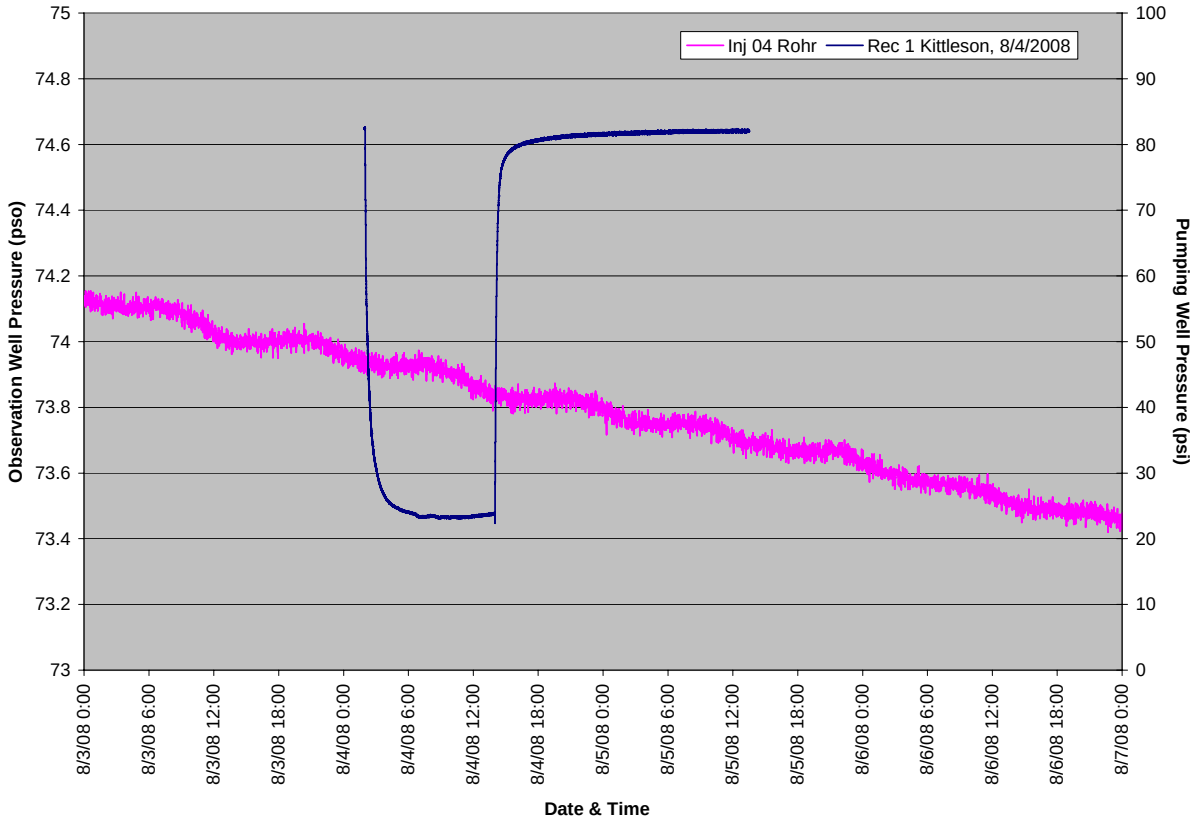
POCI 55 Monitor Well Lower Zone Fluid Pressure

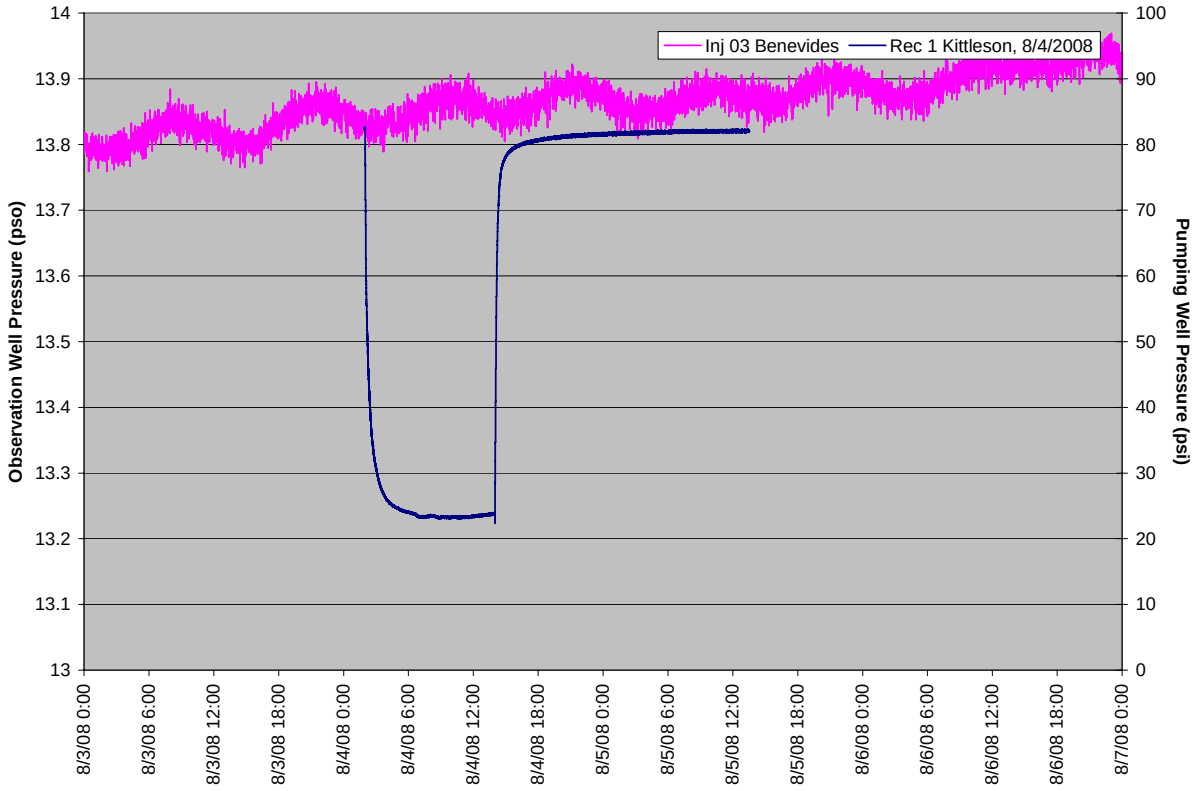


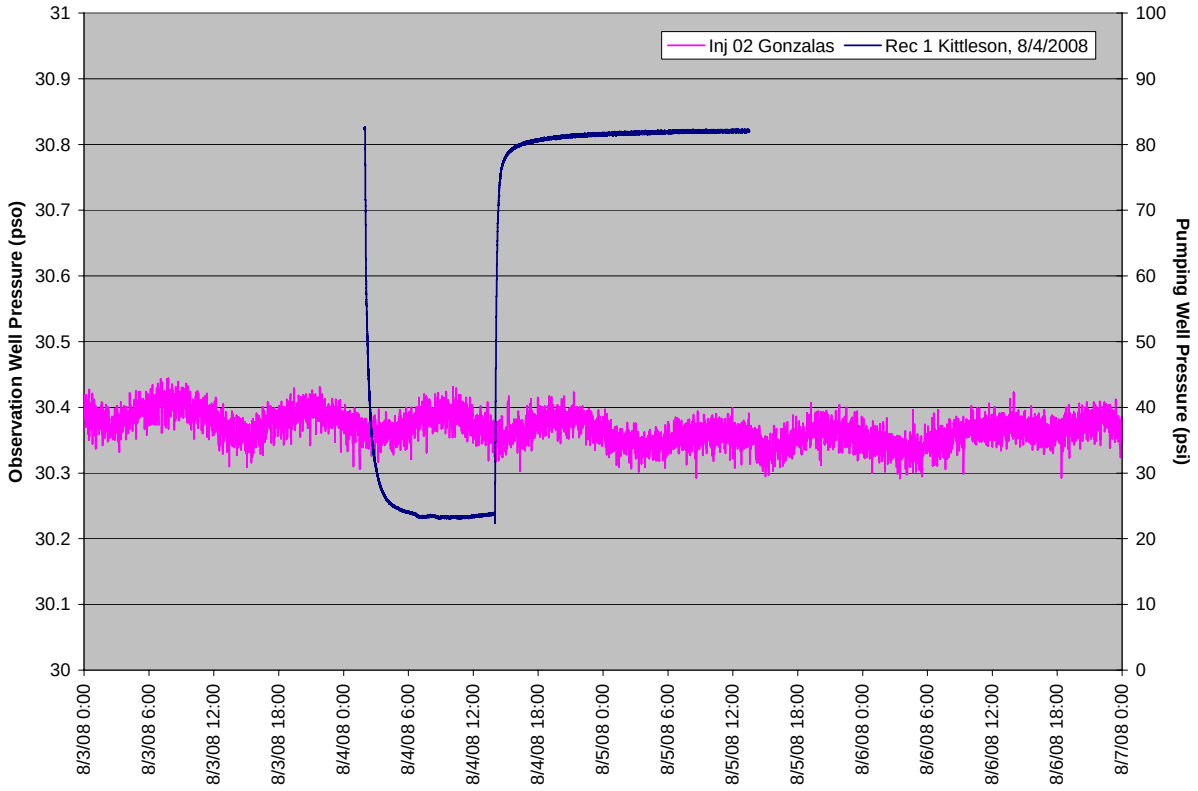

Rec 3 PEI
Rec 1 Kittleson, 8/4/2008
Observation Well Pressure (pso)
Pumping Well Pressure (psi)
54
53.9
53.8
53.7
53.6
53.5
53.4
53.3
53.2
53.1
53
100
90
80
70
60
50
40
30
20
10
0
8/3/08 0:00
8/3/08 6:00
8/3/08 12:00
8/3/08 18:00
8/4/08 0:00
8/4/08 6:00
8/4/08 12:00
8/4/08 18:00
8/5/08 0:00
8/5/08 6:00
8/5/08 12:00
8/5/08 18:00
8/6/08 0:00
8/6/08 6:00
8/6/08 12:00
8/6/08 18:00
8/7/08 0:00

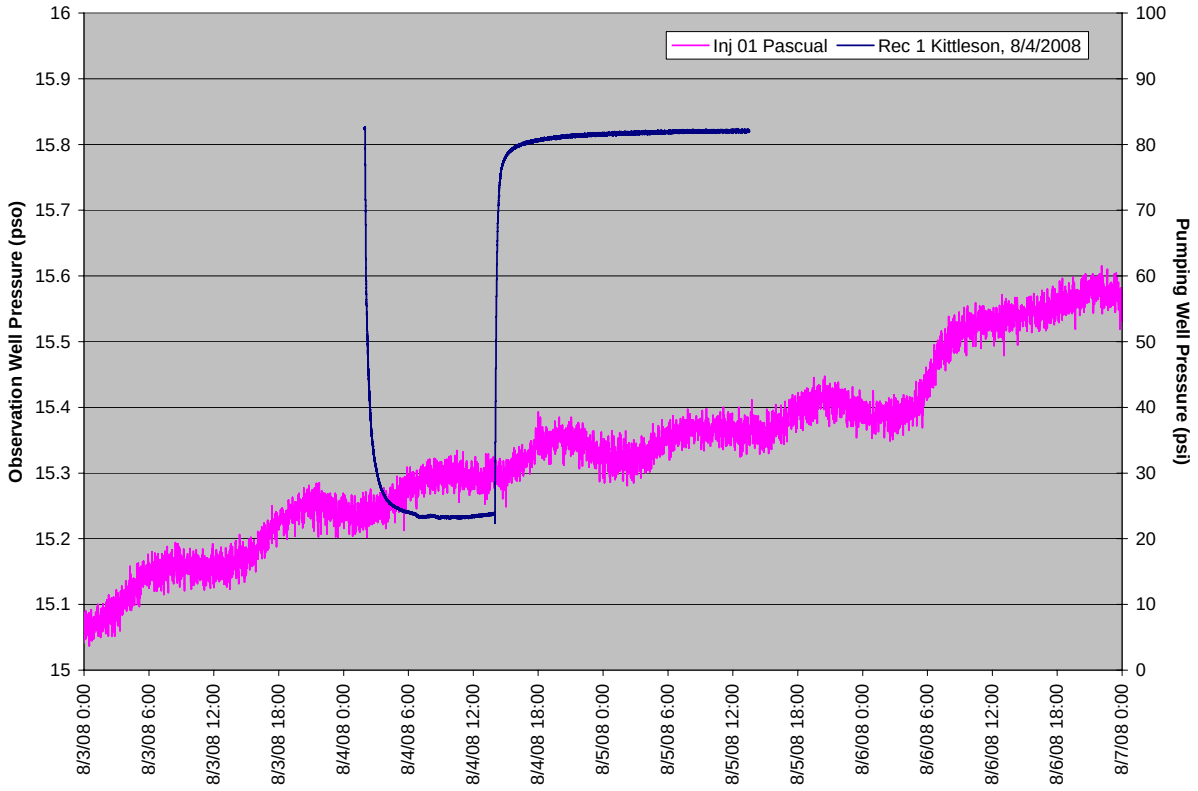

Inj 08 Haeffner
Rec 1 Kittleson, 8/4/2008
Observation Well Pressure (pso)
Pumping Well Pressure (psi)
71
70.9
70.8
70.7
70.6
70.5
70.4
70.3
70.2
70.1
70
100
90
80
70
60
50
40
30
20
10
0
8/3/08 0:00
8/3/08 6:00
8/3/08 12:00
8/3/08 18:00
8/4/08 0:00
8/4/08 6:00
8/4/08 12:00
8/4/08 18:00
8/5/08 0:00
8/5/08 6:00
8/5/08 12:00
8/5/08 18:00
8/6/08 0:00

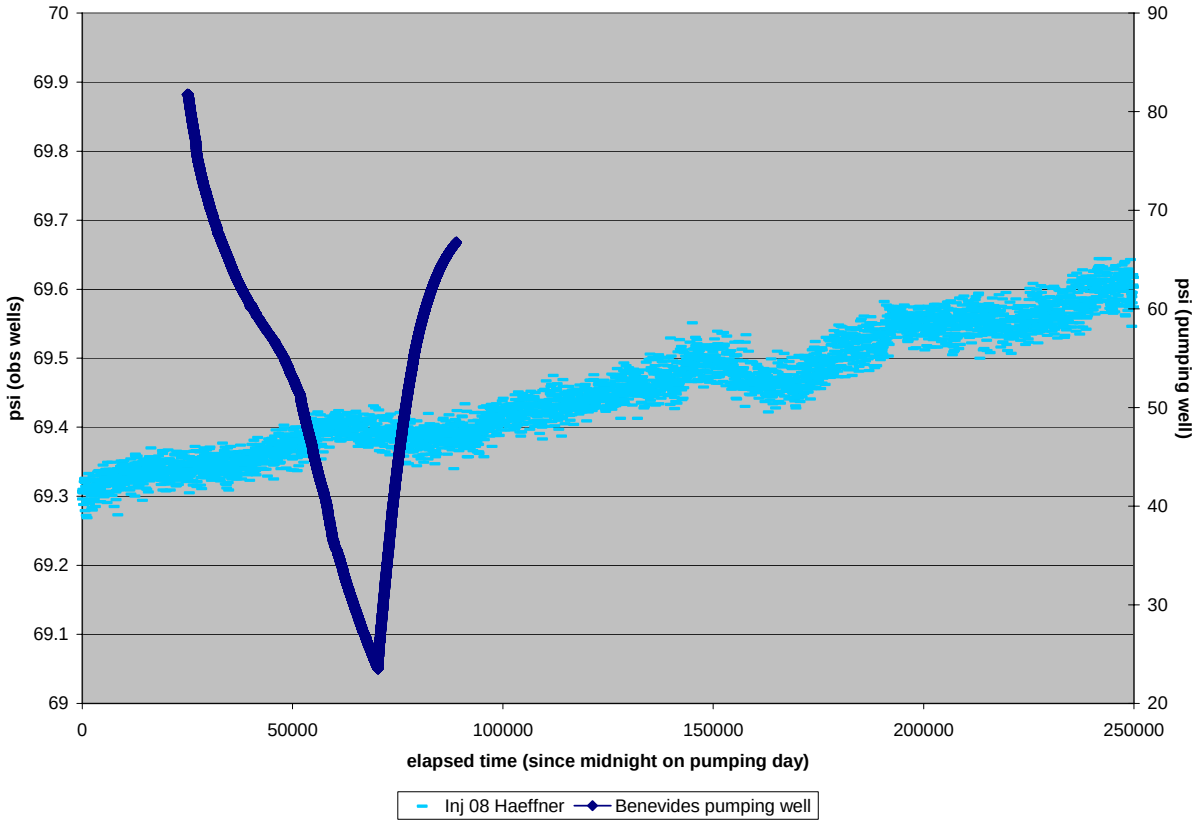

Inj 05 Rohr
Rec 1 Kittleson, 8/4/2008
Observation Well Pressure (pso)
Pumping Well Pressure (psi)
28
27.9
27.8
27.7
27.6
27.5
27.4
27.3
27.2
27.1
27
100
90
80
70
60
50
40
30
20
10
0
8/3/08 0:00
8/3/08 6:00
8/3/08 12:00
8/3/08 18:00
8/4/08 0:00
8/4/08 6:00
8/4/08 12:00
8/4/08 18:00
8/5/08 0:00
8/5/08 6:00
8/5/08 12:00
8/5/08 18:00
8/6/08 0:00
8/6/08 6:00
8/6/08 12:00
8/6/08 18:00
8/7/08 0:00

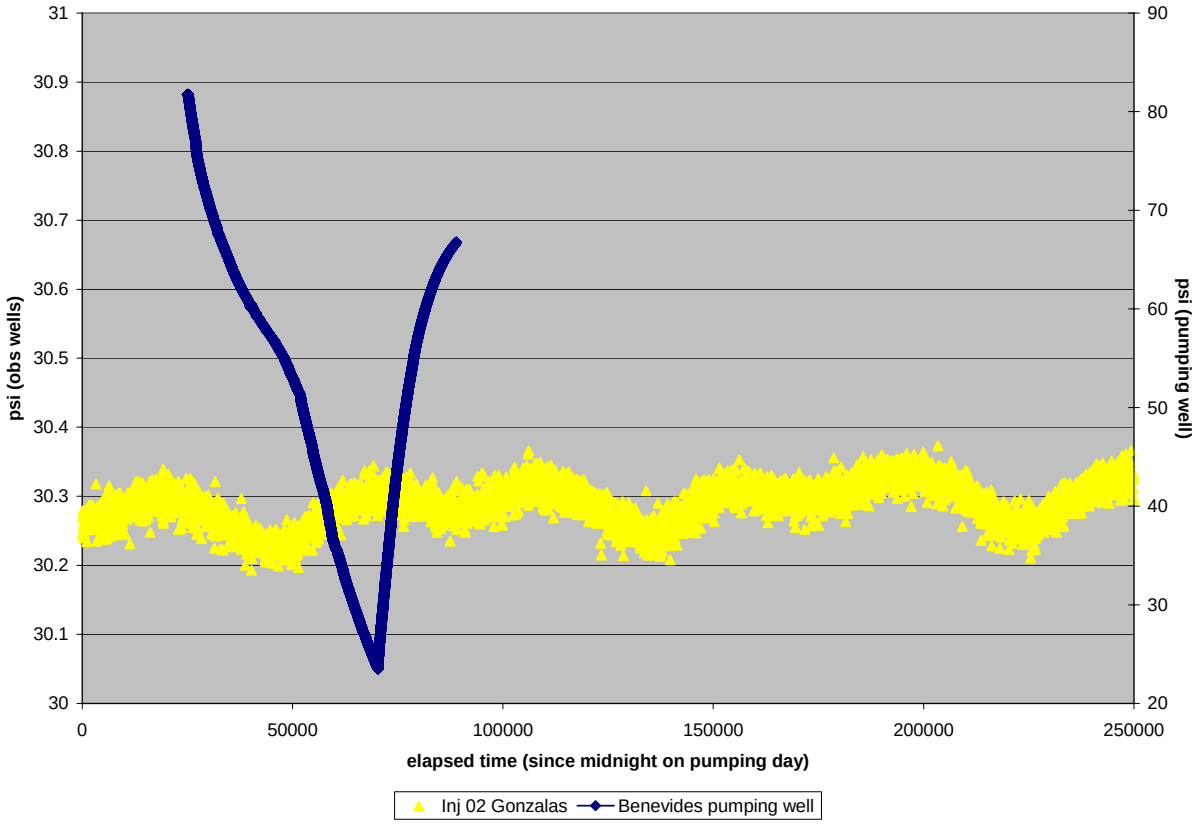

Inj 04 Rohr
Rec 1 Kittleson, 8/4/2008
Observation Well Pressure (pso)
Pumping Well Pressure (psi)
Date & Time
75
74.8
74.6
74.4
74.2
74
73.8
73.6
73.4
73.2
73
100
90
80
70
60
50
40
30
20
10
0
8/3/08 0:00
8/3/08 6:00
8/3/08 12:00
8/3/08 18:00
8/4/08 0:00
8/4/08 6:00
8/4/08 12:00
8/4/08 18:00
8/5/08 0:00
8/5/08 6:00
8/5/08 12:00
8/5/08 18:00
8/6/08 0:00
8/6/08 6:00
8/6/08 12:00
8/6/08 18:00
8/7/08 0:00

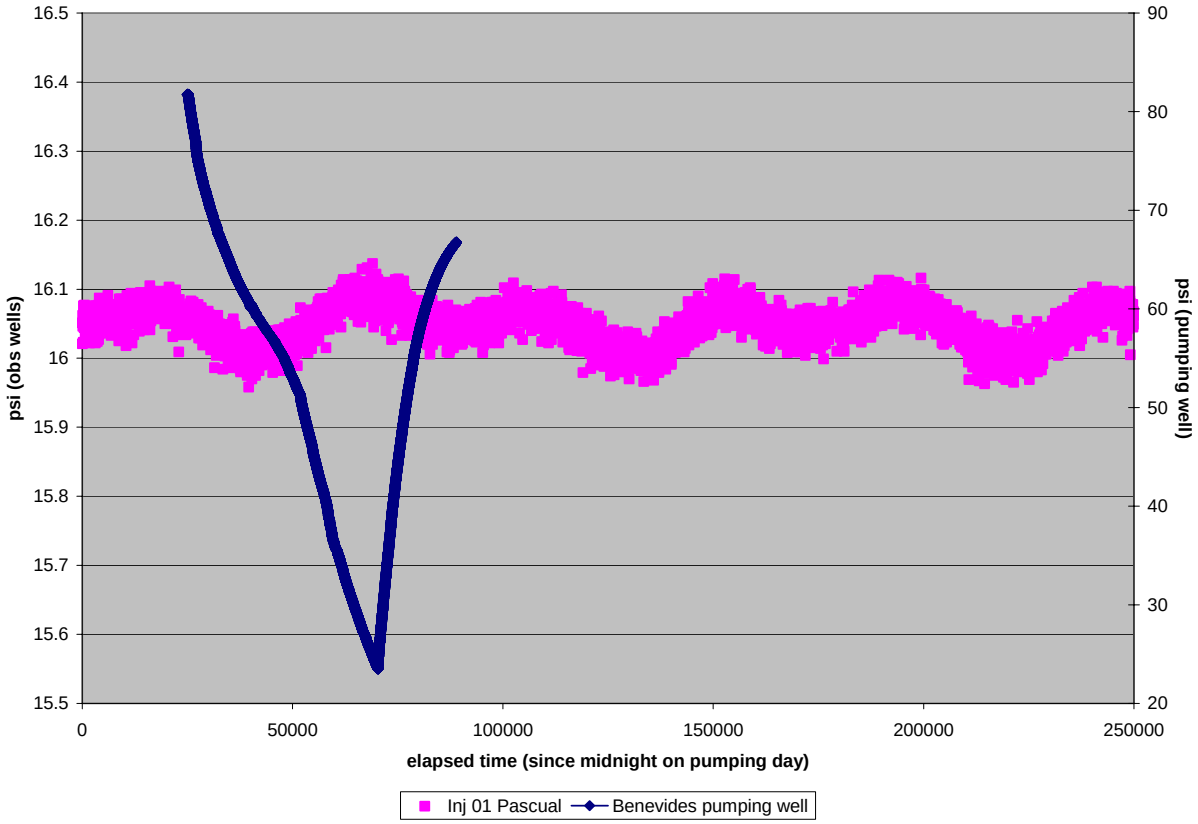

Inj 03 Benevides
Rec 1 Kittleson, 8/4/2008
Observation Well Pressure (pso)
Pumping Well Pressure (psi)
14
13.9
13.8
13.7
13.6
13.5
13.4
13.3
13.2
13.1
13
100
90
80
70
60
50
40
30
20
10
0
8/3/08 0:00
8/3/08 6:00
8/3/08 12:00
8/3/08 18:00
8/4/08 0:00
8/4/08 6:00
8/4/08 12:00
8/4/08 18:00
8/5/08 0:00
8/5/08 6:00
8/5/08 12:00
8/5/08 18:00
8/6/08 0:00
8/6/08 6:00
8/6/08 12:00
8/6/08 18:00
8/7/08 0:00

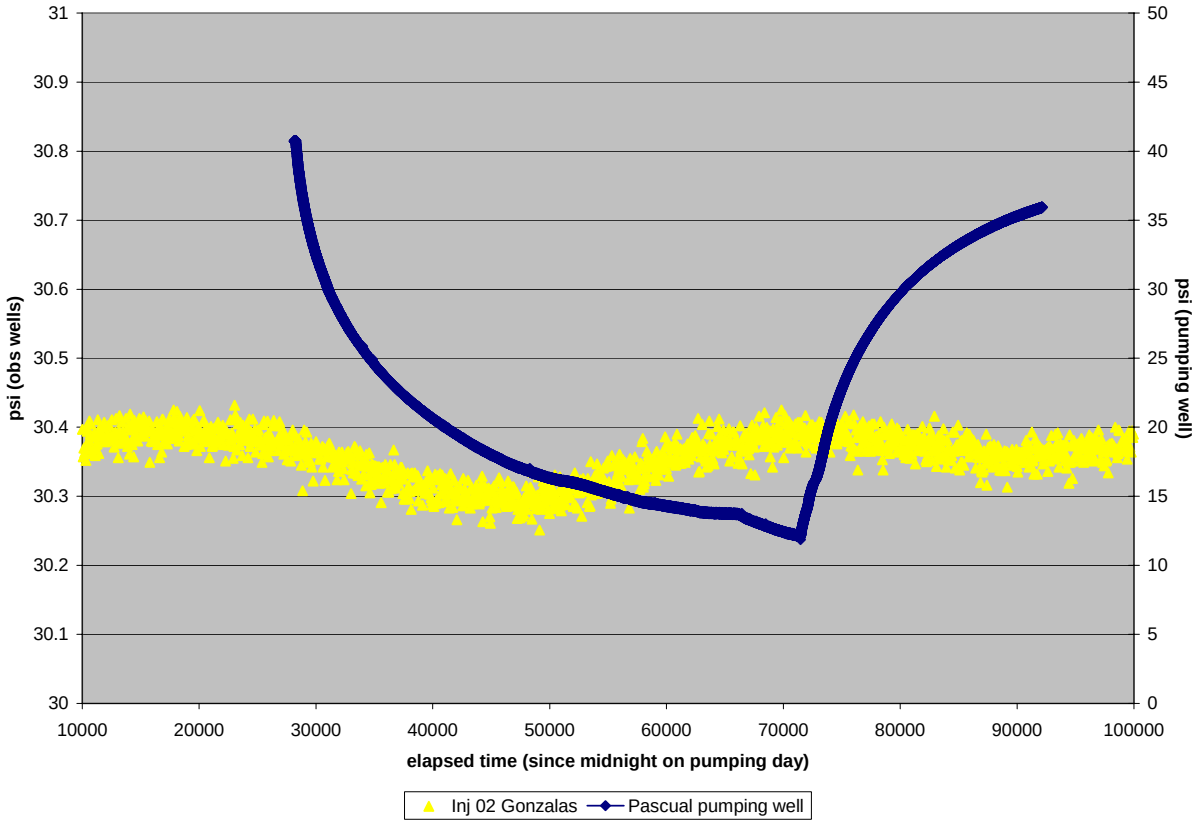

Inj 02 Gonzalas
Rec 1 Kittleson, 8/4/2008
Observation Well Pressure (pso)
Pumping Well Pressure (psi)
31
30.9
30.8
30.7
30.6
30.5
30.4
30.3
30.2
30.1
30
100
90
80
70
60
50
40
30
20
10
0
8/3/08 0:00
8/3/08 6:00
8/3/08 12:00
8/3/08 18:00
8/4/08 0:00
8/4/08 6:00
8/4/08 12:00
8/4/08 18:00
8/5/08 0:00
8/5/08 6:00
8/5/08 12:00
8/5/08 18:00
8/6/08 0:00
8/6/08 6:00
8/6/08 12:00
8/6/08 18:00
8/7/08 0:00

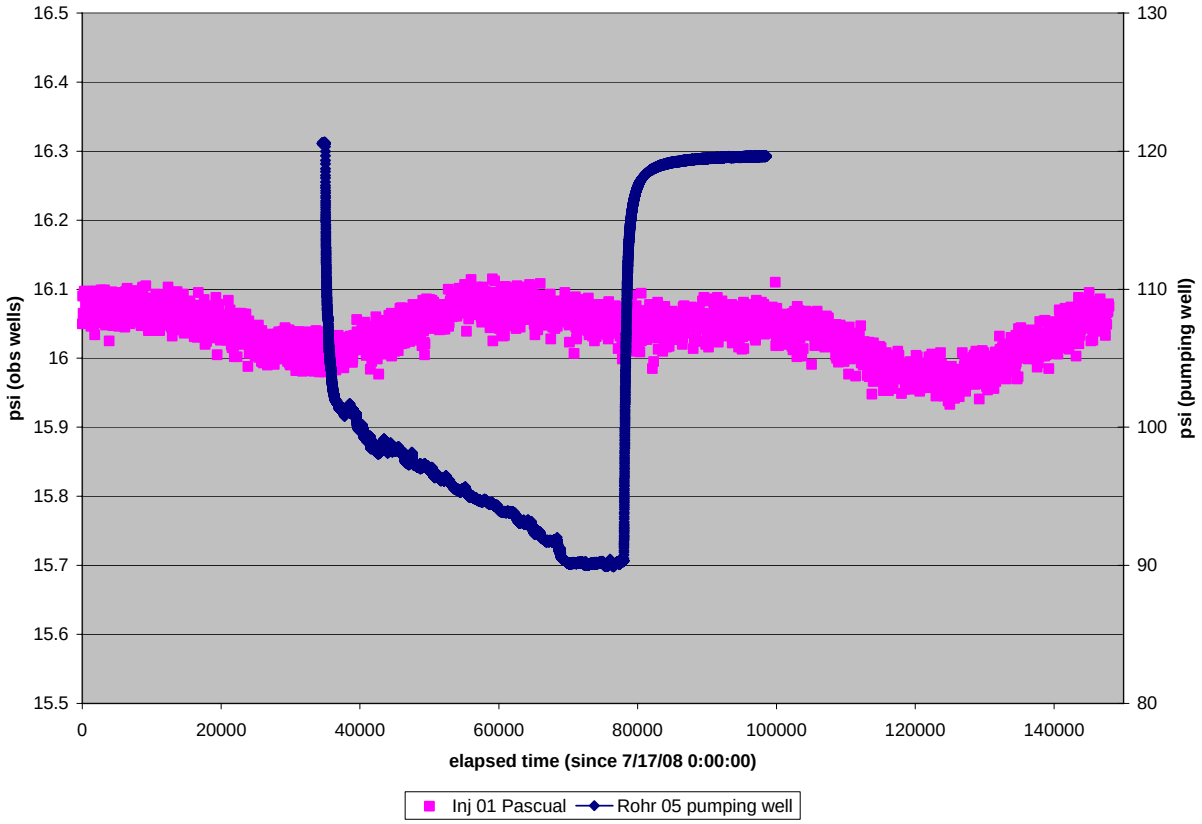

Inj 01 Pascual
Rec 1 Kittleson, 8/4/2008
Observation Well Pressure (pso)
Pumping Well Pressure (psi)
16
15.9
15.8
15.7
15.6
15.5
15.4
15.3
15.2
15.1
15
100
90
80
70
60
50
40
30
20
10
0
8/3/08 0:00
8/3/08 6:00
8/3/08 12:00
8/3/08 18:00
8/4/08 0:00
8/4/08 6:00
8/4/08 12:00
8/4/08 18:00
8/5/08 0:00
8/5/08 6:00
8/5/08 12:00
8/5/08 18:00
8/6/08 0:00
8/6/08 6:00
8/6/08 12:00
8/6/08 18:00
8/7/08 0:00

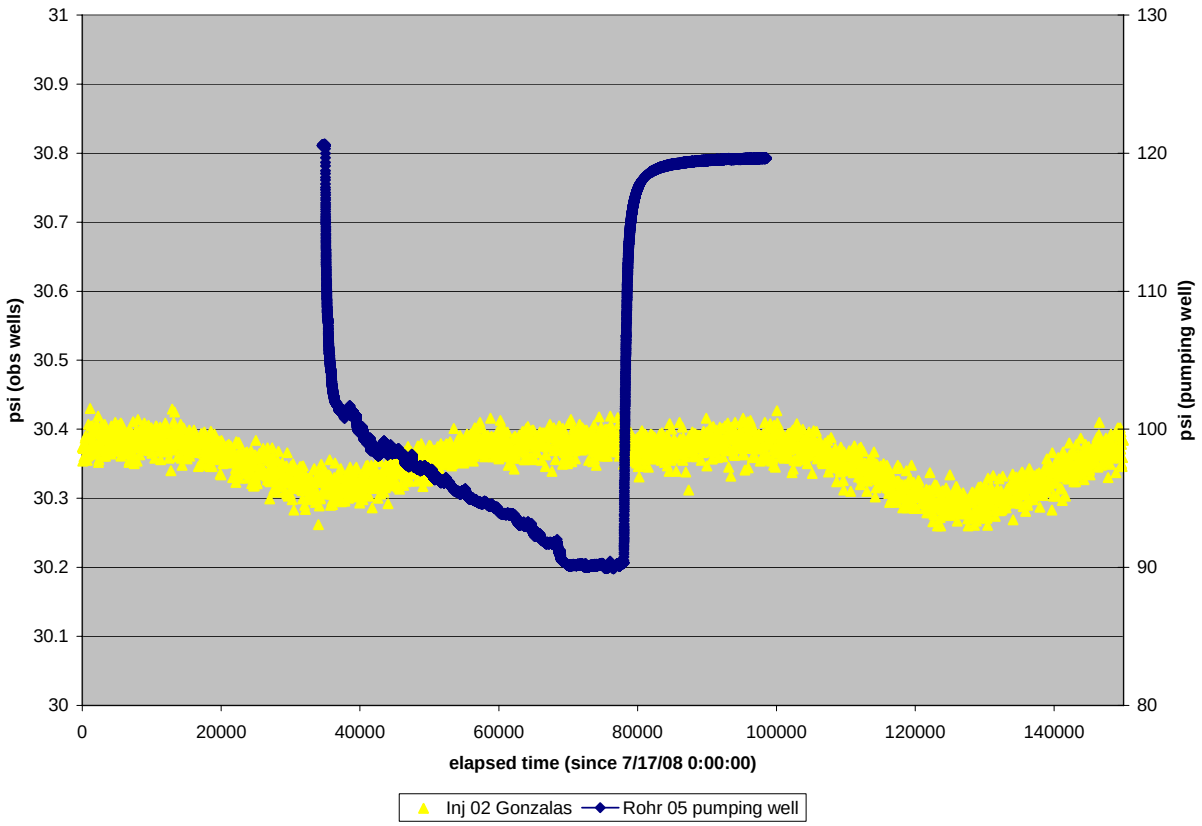

70
69.9
69.8
69.7
69.6
69.5
69.4
69.3
69.2
69.1
69
psi (obs wells)
90
80
70
60
50
40
30
20
psi (pumping well)
0
50000
100000
150000
200000
250000
elapsed time (since midnight on pumping day)
Inj 08 Haeffner
Benevides pumping well

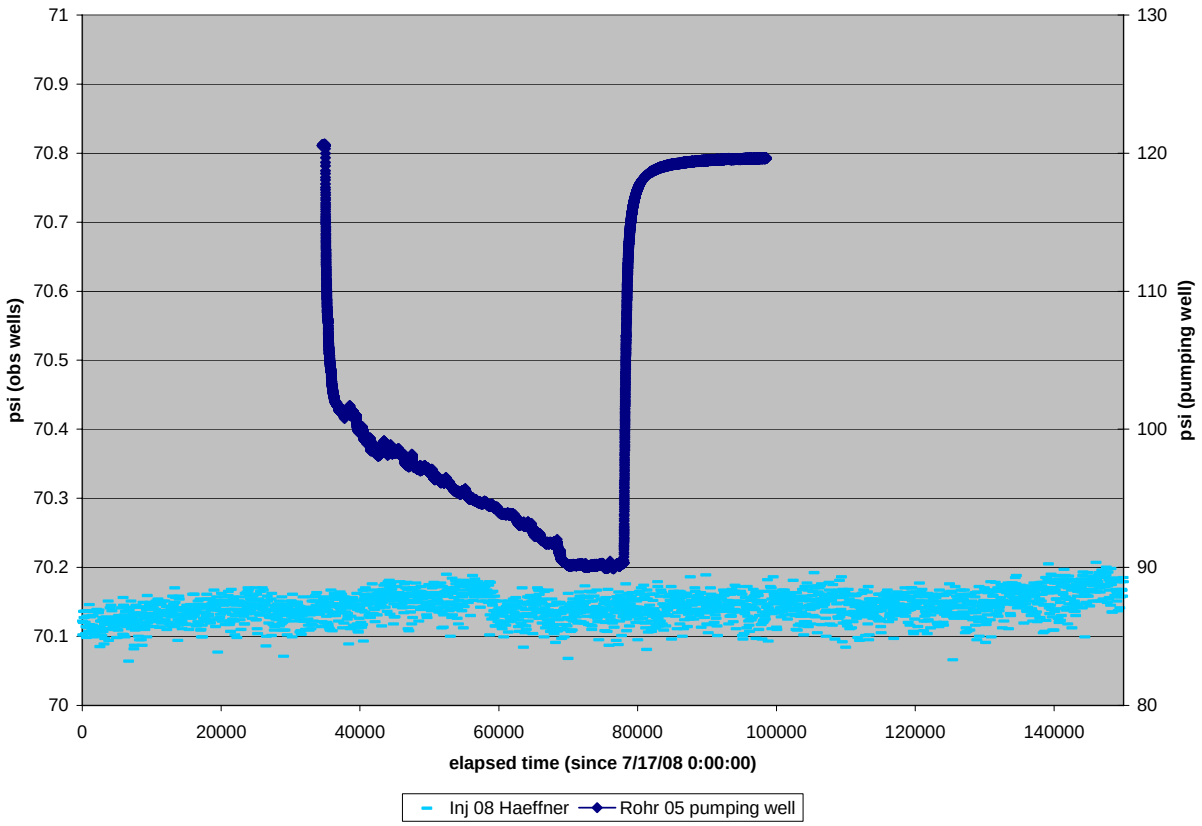

31
30.9
30.8
30.7
30.6
30.5
30.4
30.3
30.2
30.1
30
psi (obs wells)
90
80
70
60
50
40
30
20
psi (pumping well)
0
50000
100000
150000
200000
250000
elapsed time (since midnight on pumping day)
Inj 02 Gonzalas
Benevides pumping well

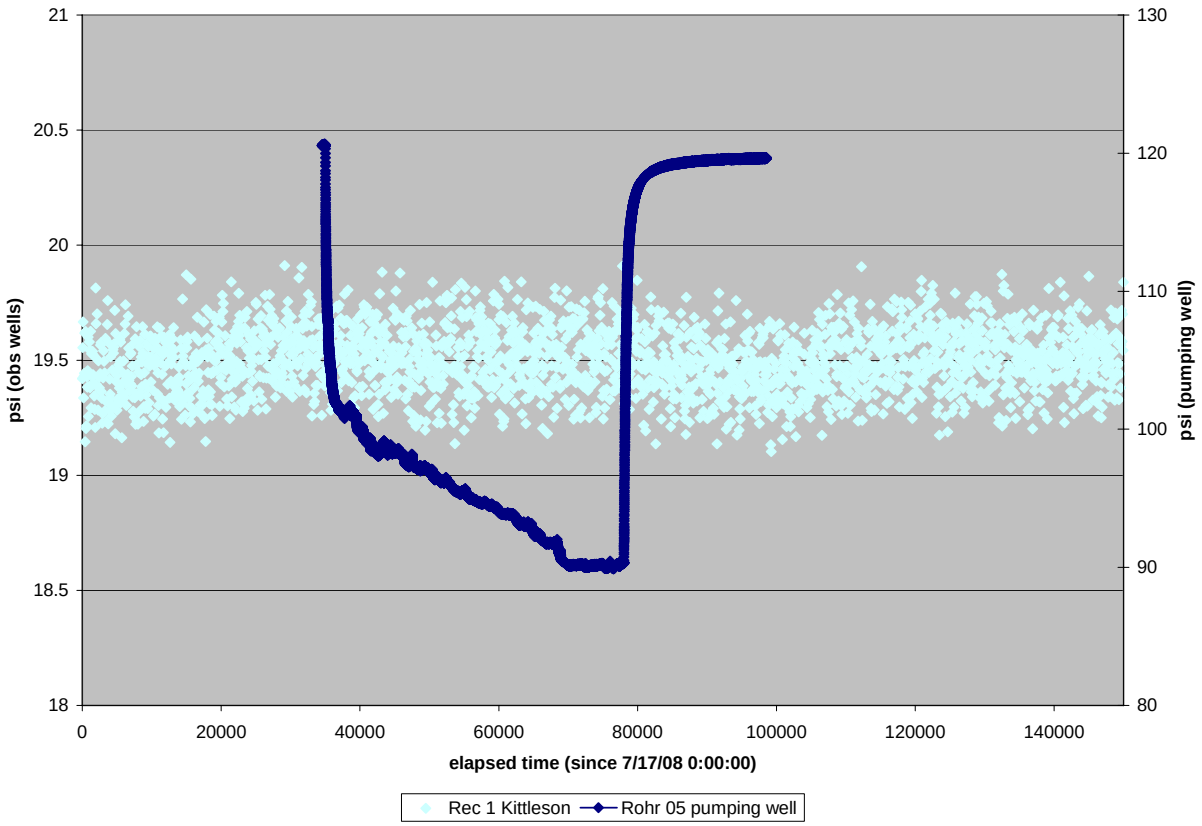

16.5
16.4
16.3
16.2
16.1
16
15.9
15.8
15.7
15.6
15.5
psi (obs wells)
90
80
70
60
50
40
30
20
psi (pumping well)
0
50000
100000
150000
200000
250000
elapsed time (since midnight on pumping day)
Inj 01 Pascual
Benevides pumping well

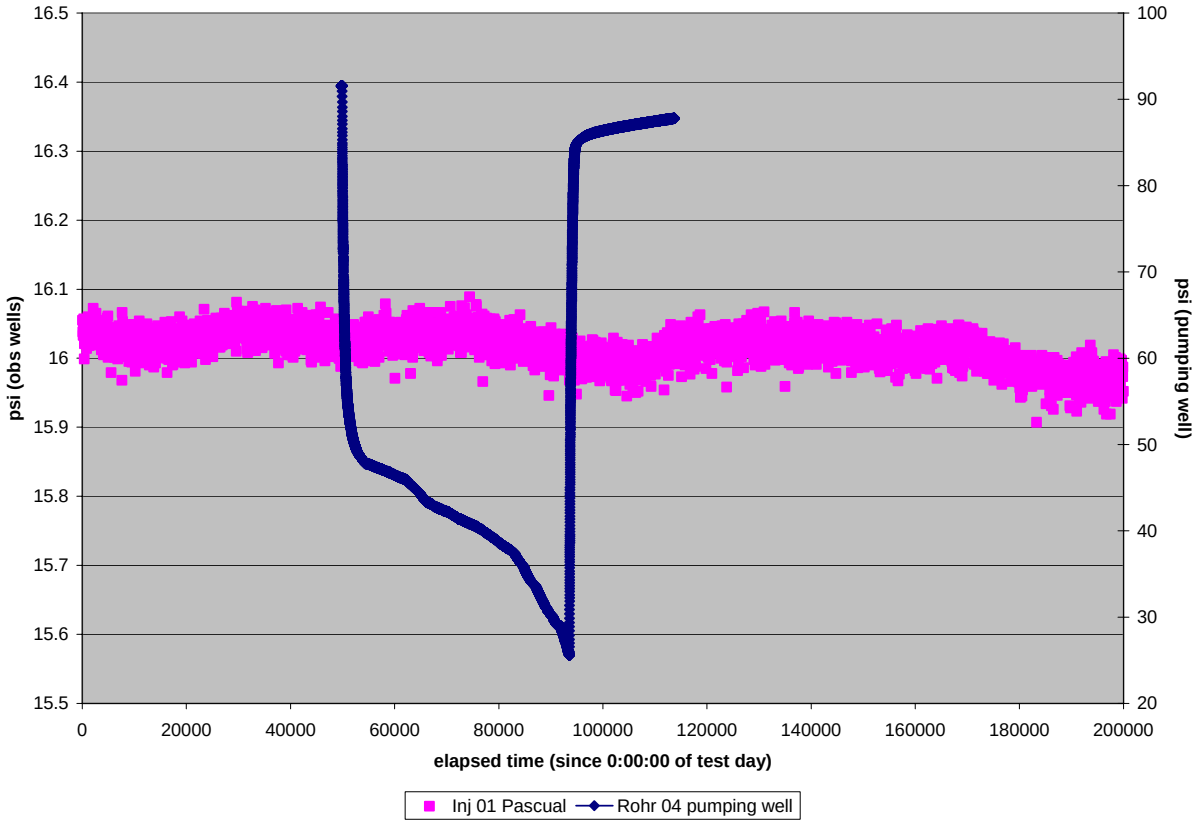

31
30.9
30.8
30.7
30.6
30.5
30.4
30.3
30.2
30.1
30
psi (obs wells)
50
45
40
35
30
25
20
15
10
5
0
psi (pumping well)
10000
20000
30000
40000
50000
60000
70000
80000
90000
100000
elapsed time (since midnight on pumping day)
Inj 02 Gonzalas
Pascual pumping well

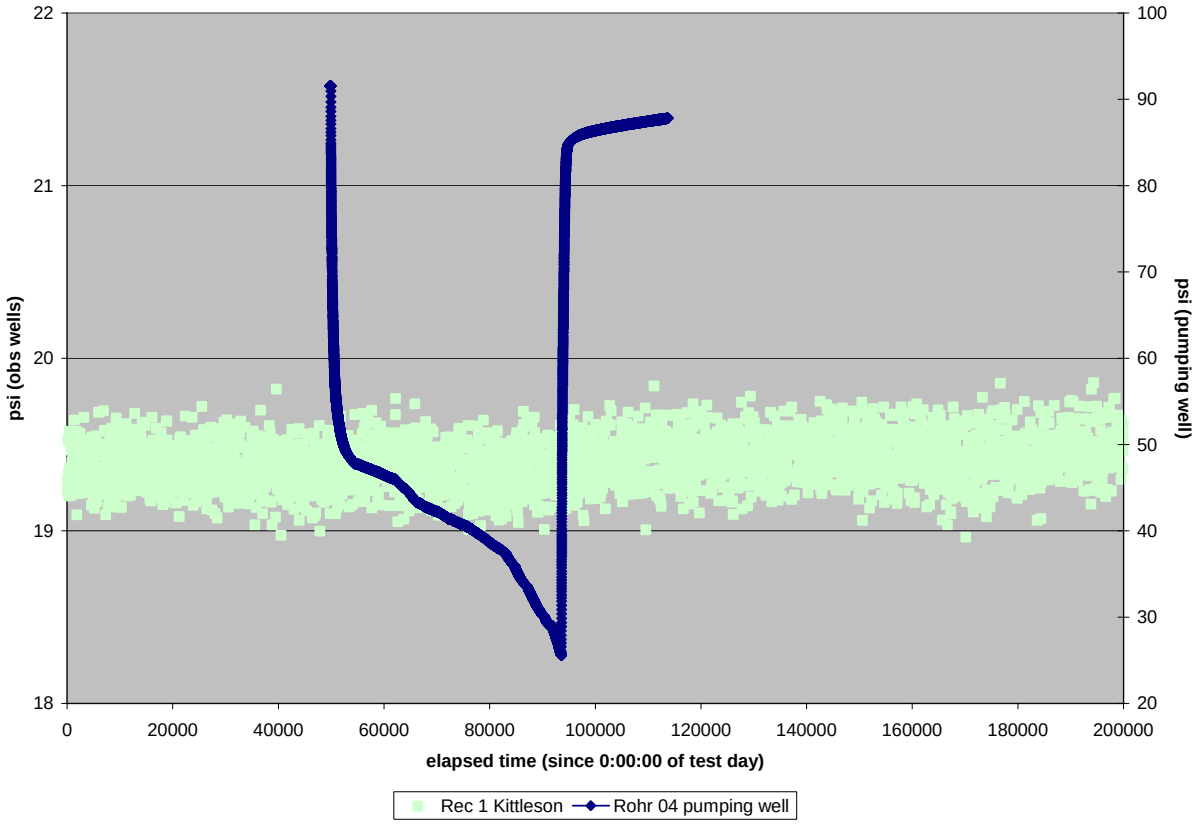

16.5
16.4
16.3
16.2
16.1
16
15.9
15.8
15.7
15.6
15.5
psi (obs wells)
130
120
110
100
90
80
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
elapsed time (since 7/17/08 0:00:00)
Inj 01 Pascual
Rohr 05 pumping well

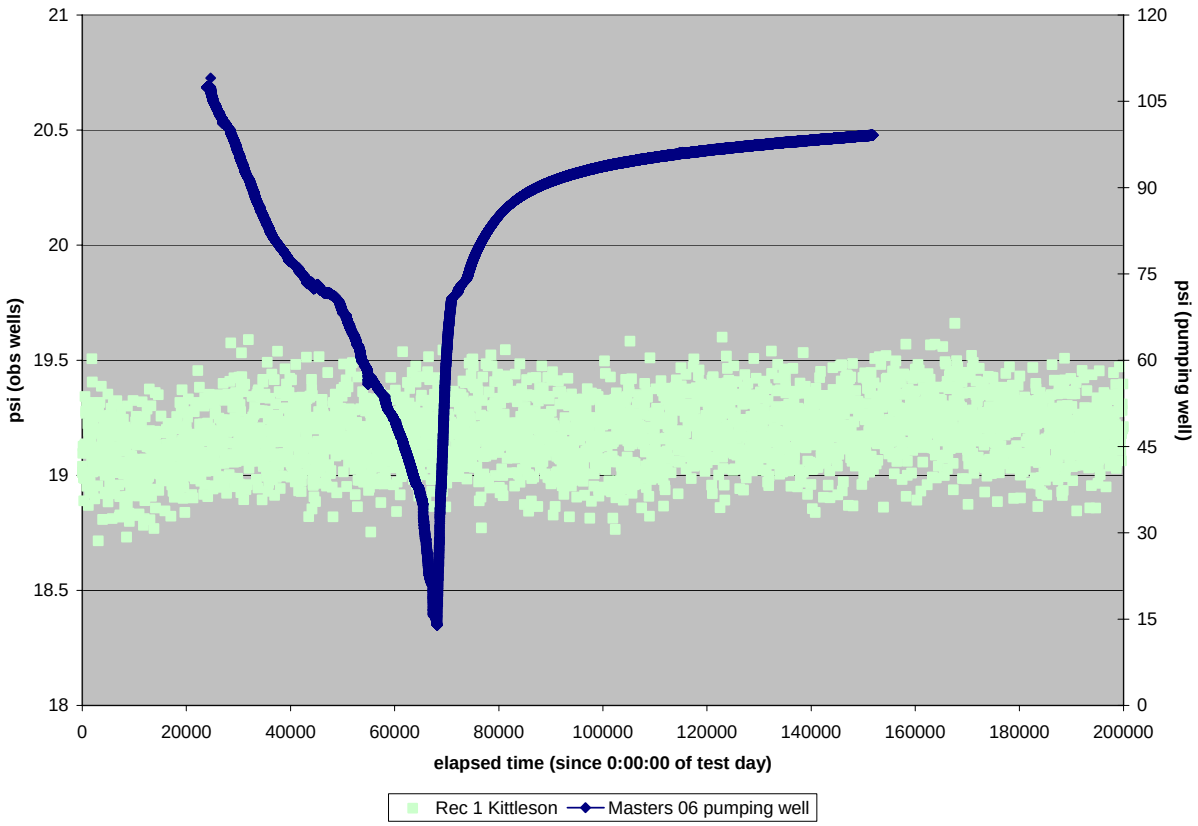

31
30.9
30.8
30.7
30.6
30.5
30.4
30.3
30.2
30.1
30
psi (obs wells)
130
120
110
100
90
80
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
elapsed time (since 7/17/08 0:00:00)
Inj 02 Gonzalas
Rohr 05 pumping well

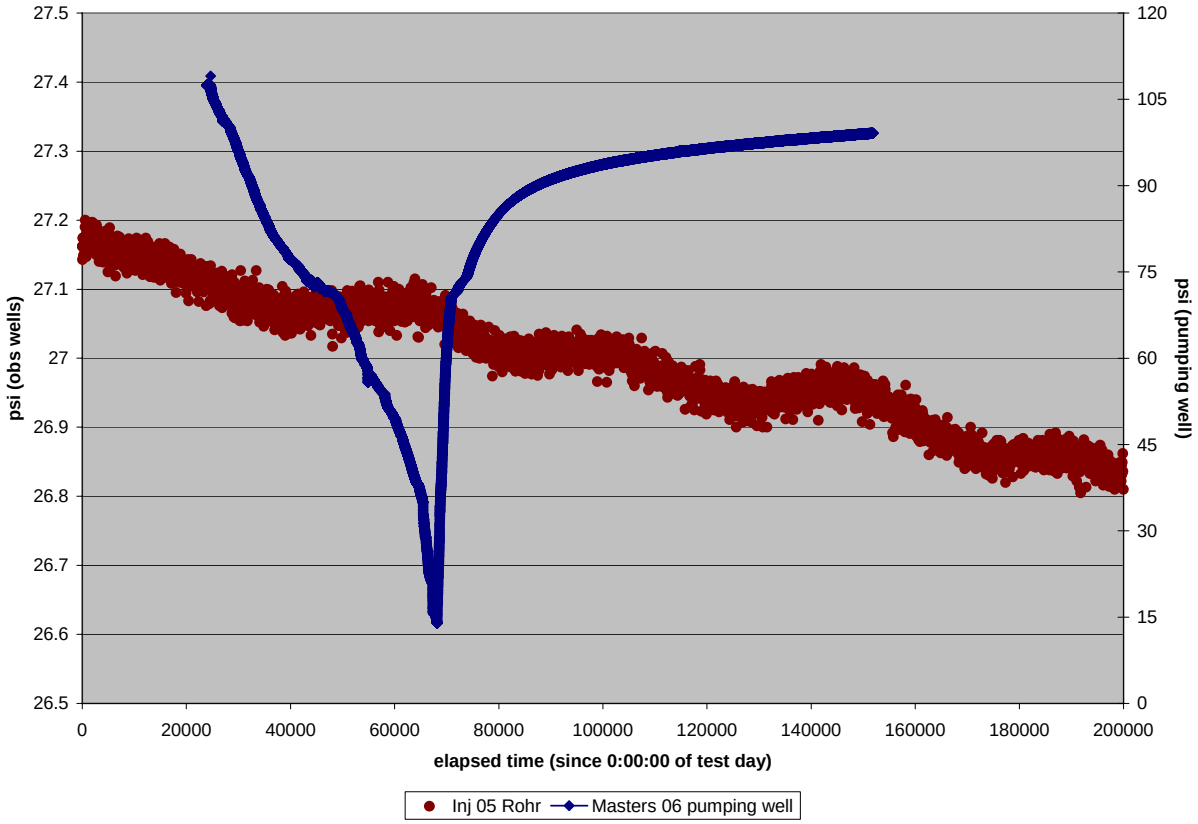

71
70.9
70.8
70.7
70.6
70.5
70.4
70.3
70.2
70.1
70
psi (obs wells)
130
120
110
100
90
80
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
elapsed time (since 7/17/08 0:00:00)
Inj 08 Haeffner
Rohr 05 pumping well

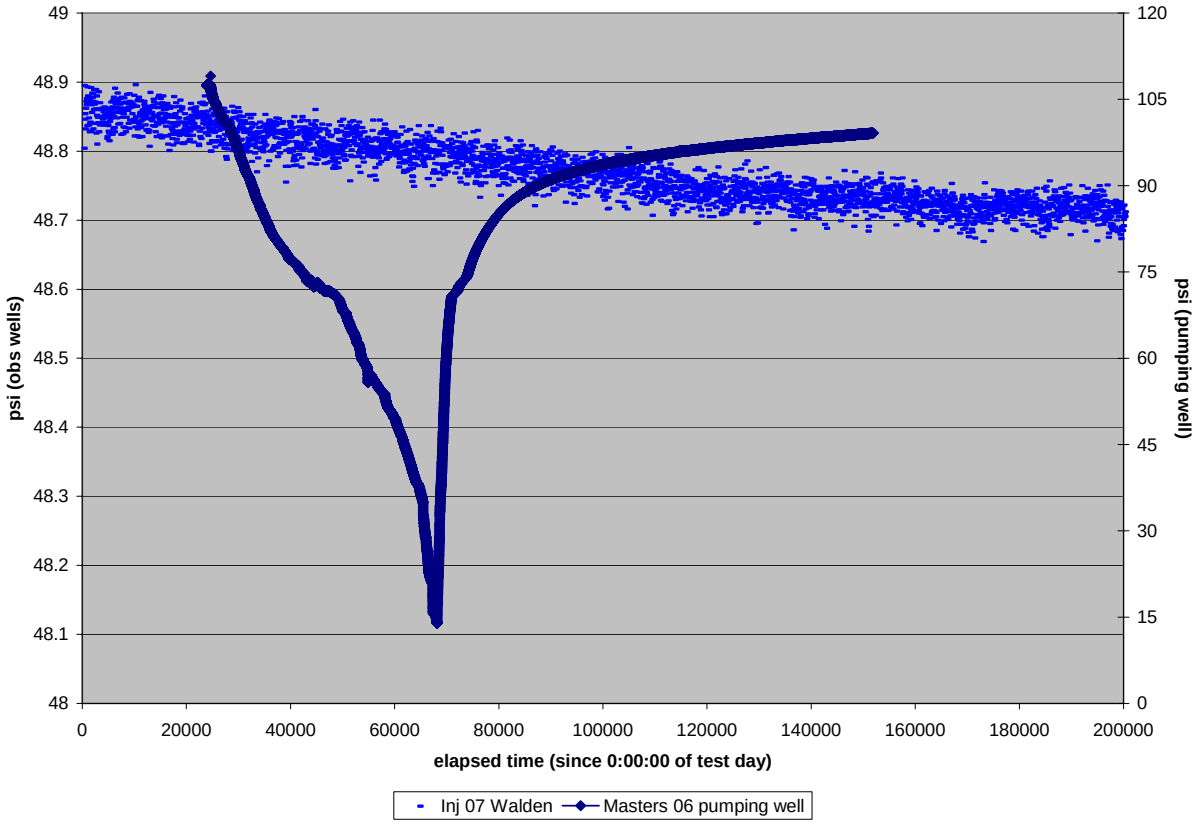

21
20.5
20
19.5
19
18.5
18
130
120
110
100
90
80
psi (obs wells)
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
elapsed time (since 7/17/08 0:00:00)
Rec 1 Kittleson
Rohr 05 pumping well


16.5
16.4
16.3
16.2
16.1
16
15.9
15.8
15.7
15.6
15.5
psi (obs wells)
100
90
80
70
60
50
40
30
20
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
elapsed time (since 0:00:00 of test day)
Inj 01 Pascual
Rohr 04 pumping well

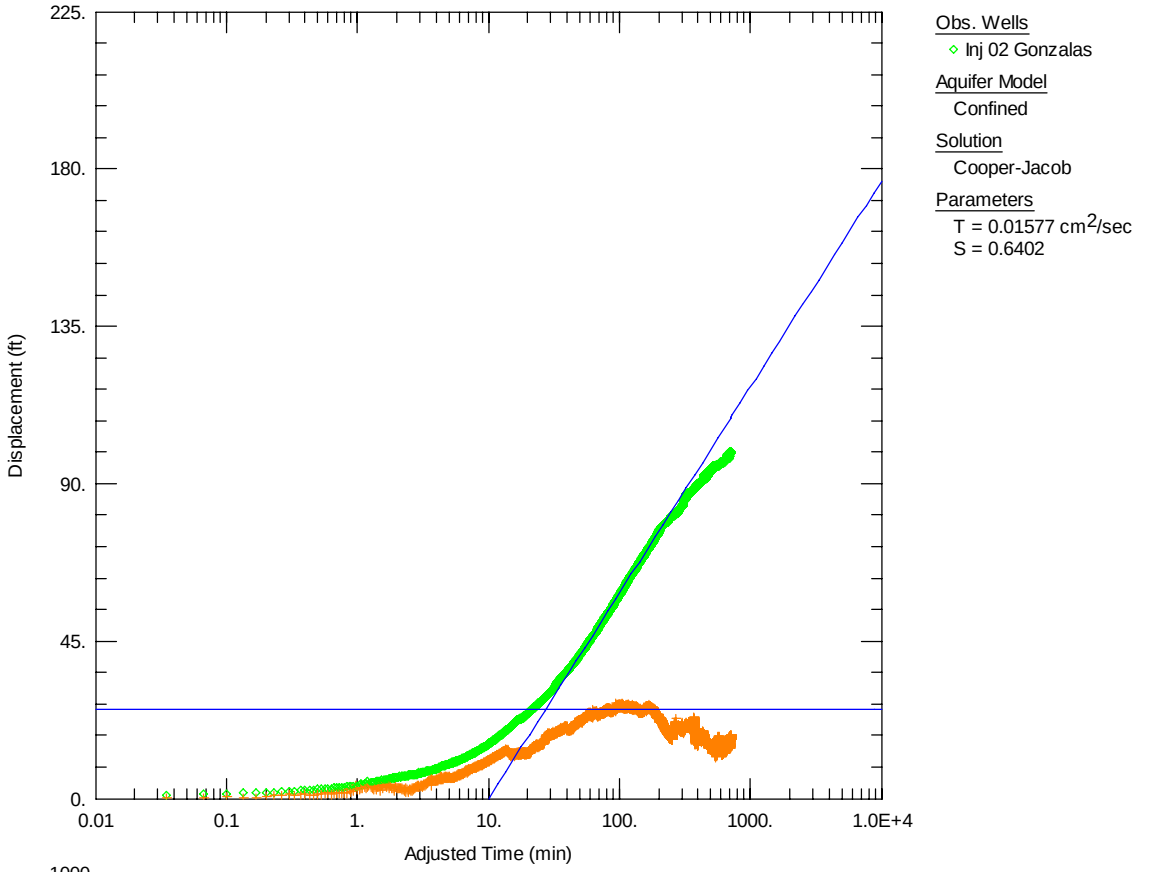

22
21
20
19
18
100
90
80
70
60
50
40
30
20
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
psi (obs wells)
psi (pumping well)
elapsed time (since 0:00:00 of test day)
Rec 1 Kittleson
Rohr 04 pumping well

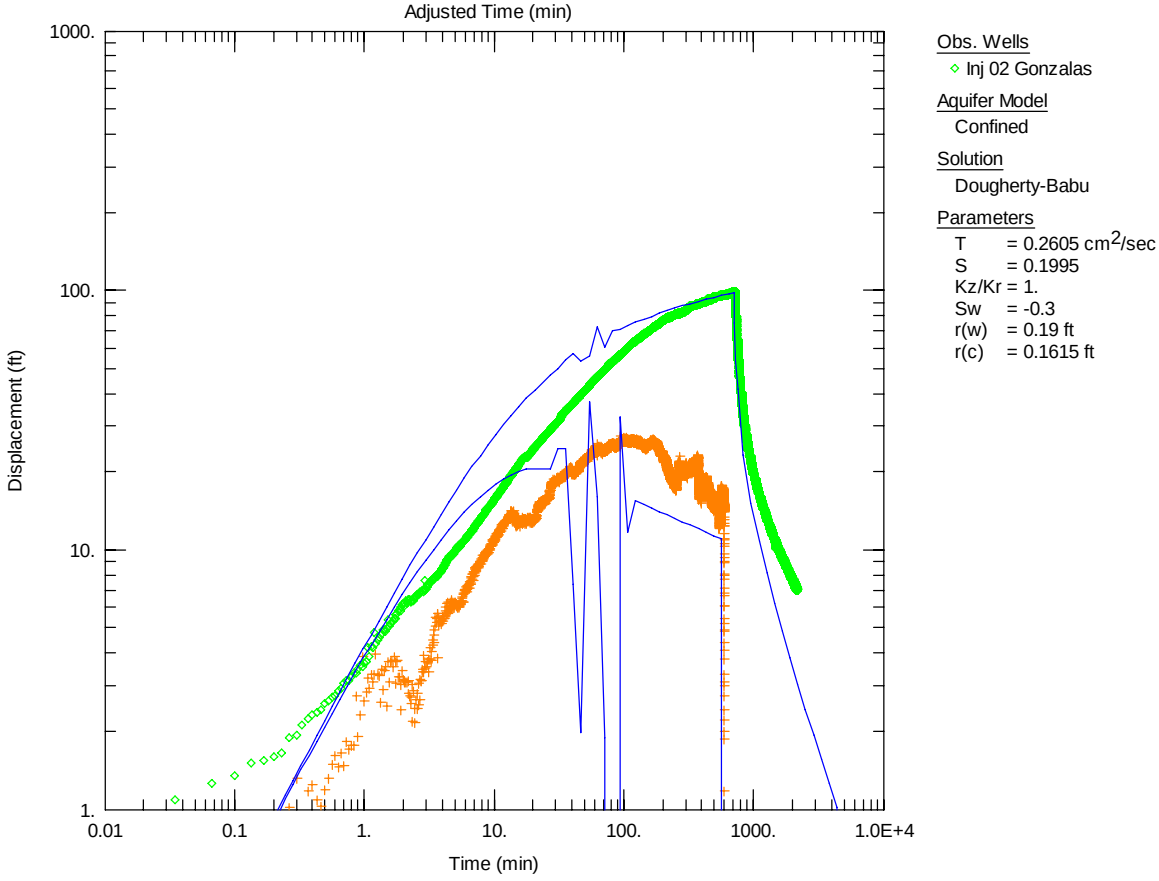

21
20.5
20
19.5
19
18.5
18
psi (obs wells)
120
105
90
75
60
45
30
15
0
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
elapsed time (since 0:00:00 of test day)
Rec 1 Kittleson
Masters 06 pumping well


27.5
27.4
27.3
27.2
27.1
27
26.9
26.8
26.7
26.6
26.5
psi (obs wells)
120
105
90
75
60
45
30
15
0
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
elapsed time (since 0:00:00 of test day)
Inj 05 Rohr
Masters 06 pumping well

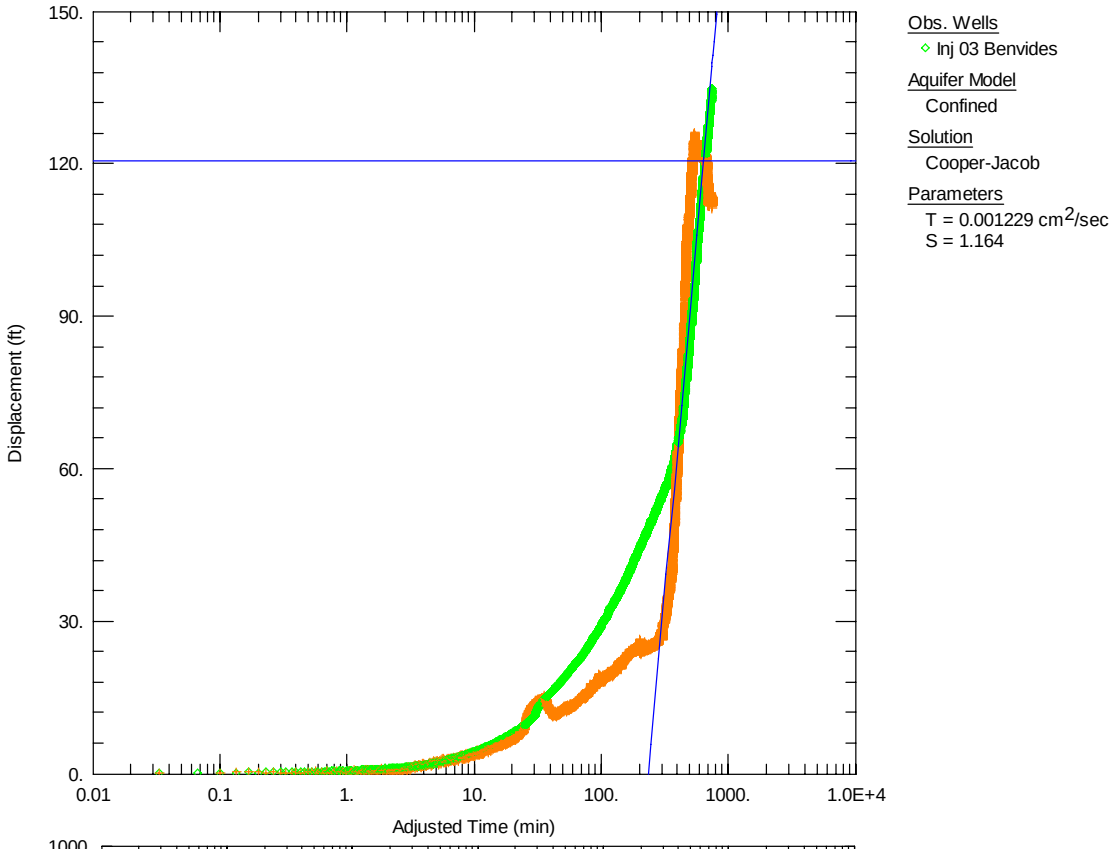

49
48.9
48.8
48.7
48.6
48.5
48.4
48.3
48.2
48.1
48
psi (obs wells)
120
105
90
75
60
45
30
15
0
psi (pumping well)
0
20000
40000
60000
80000
100000
120000
140000
160000
180000
200000
elapsed time (since 0:00:00 of test day)
Inj 07 Walden
Masters 06 pumping well

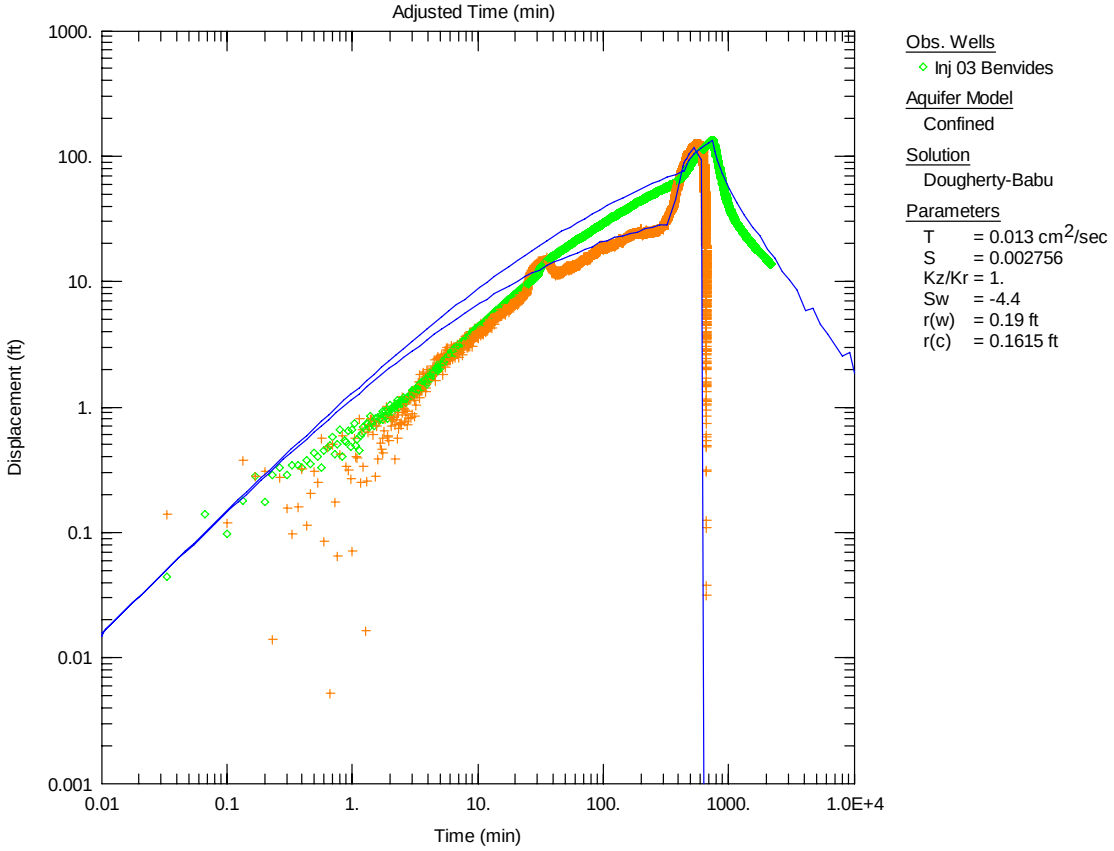
Inj 02 Gonzalas, 8/20/08



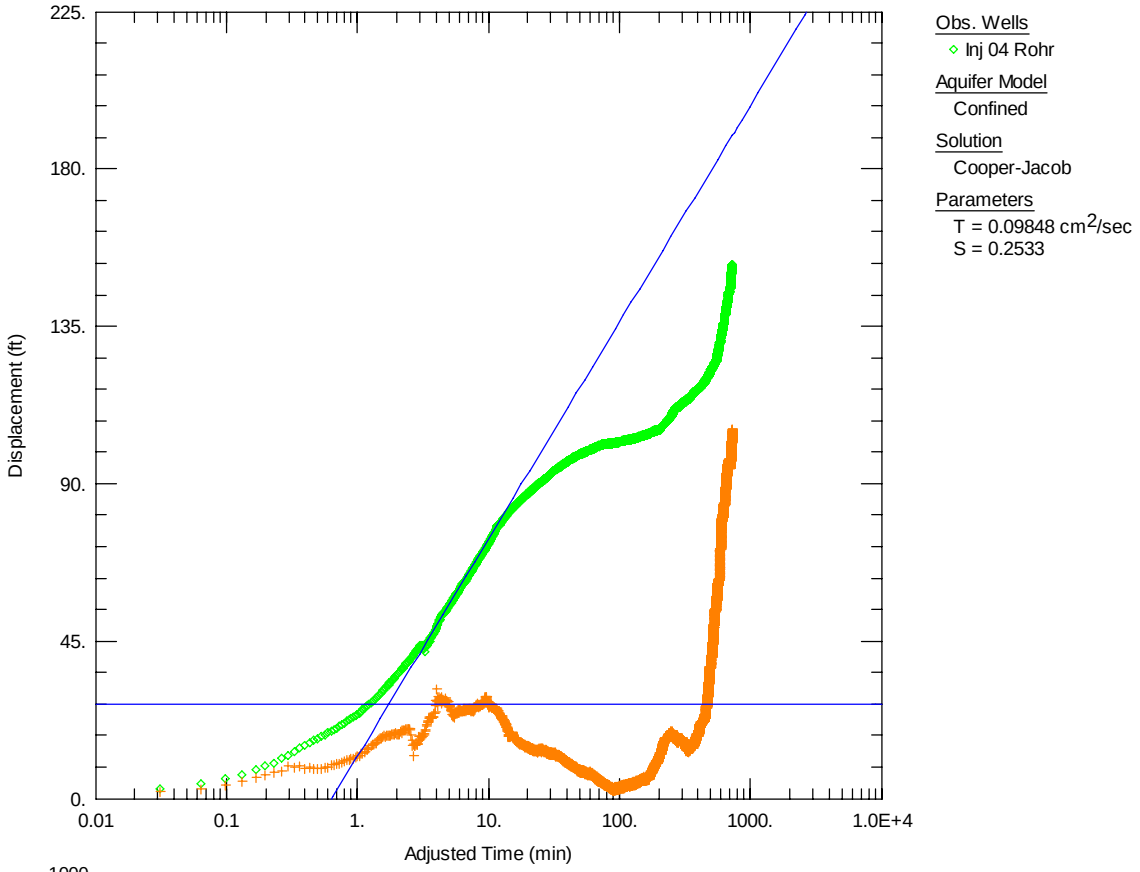


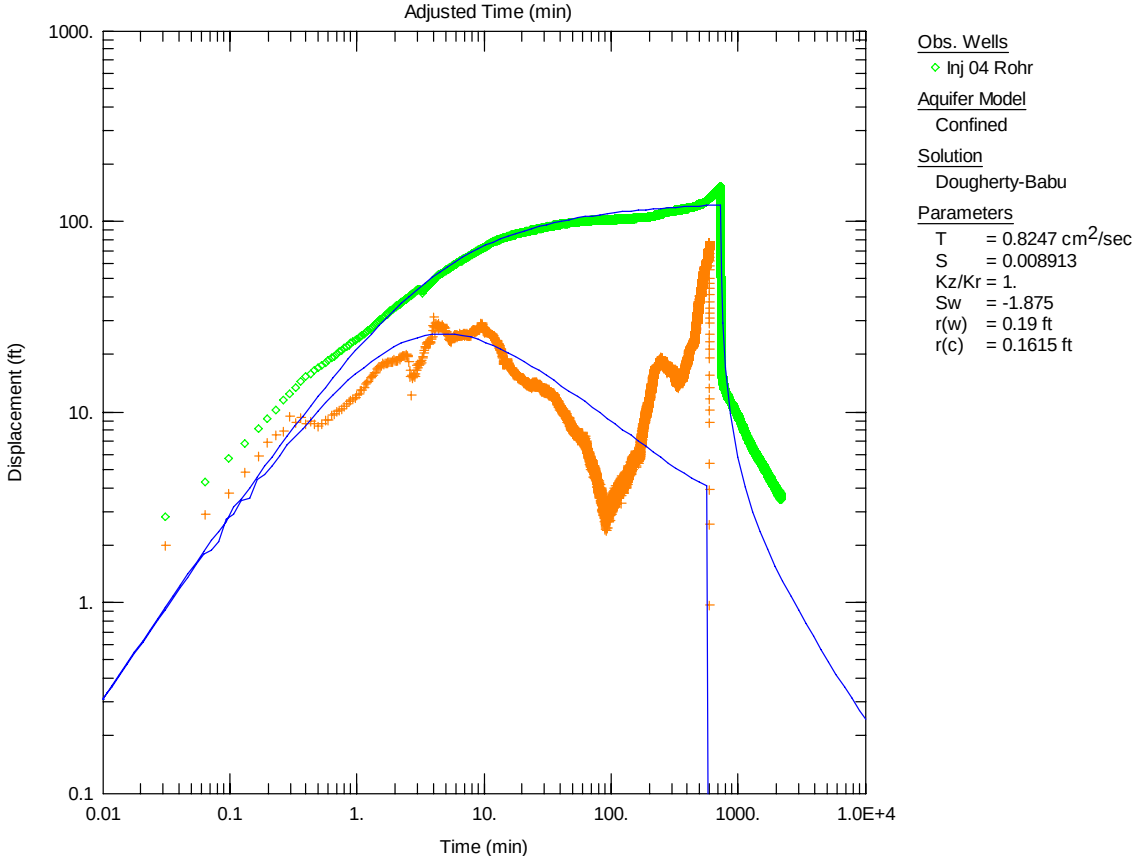
Inj 03 Benevides, 7/17/2008



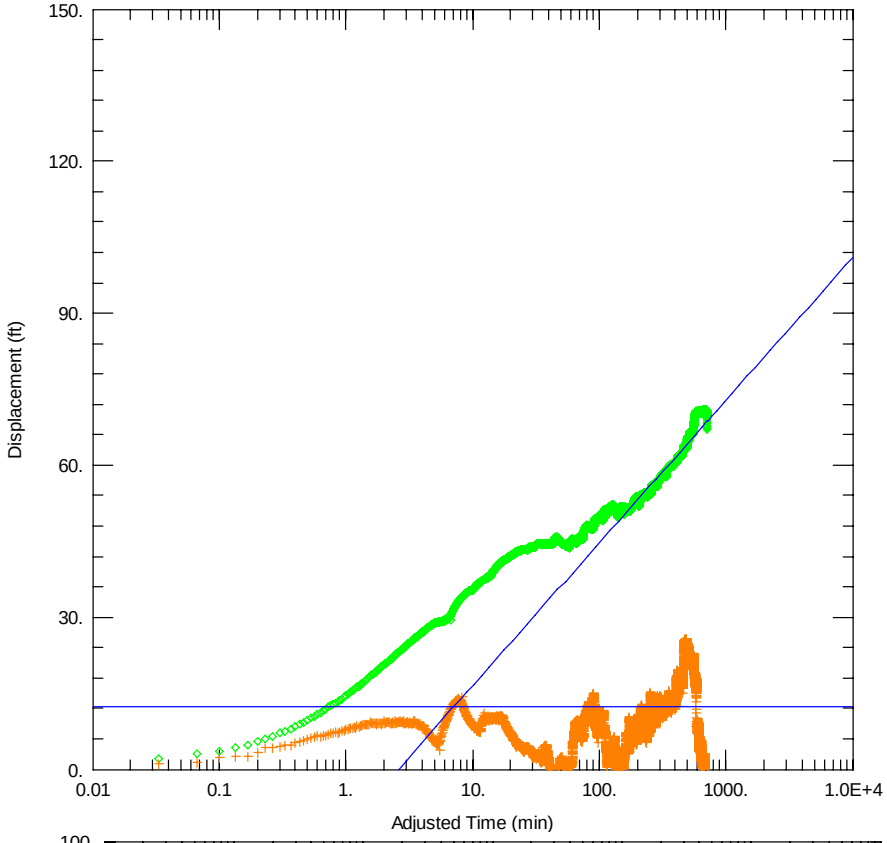


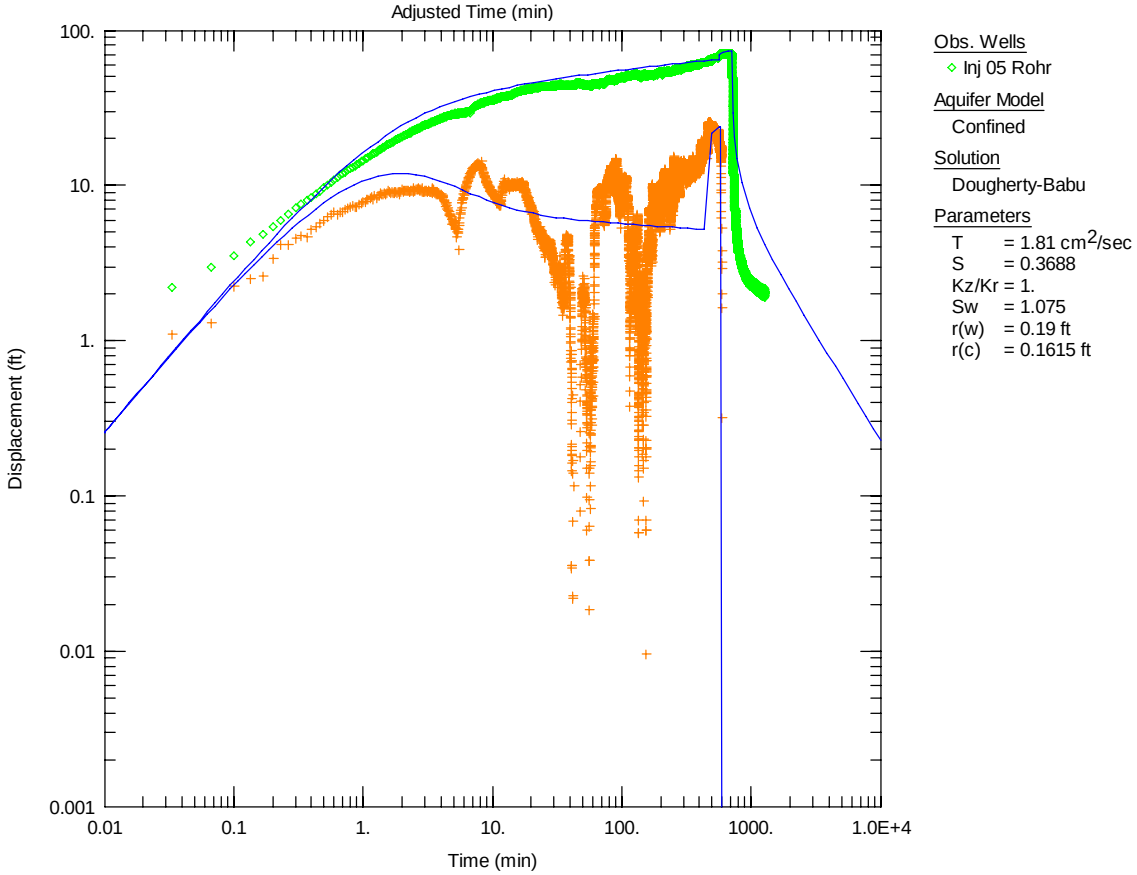
Inj 04 Rohr, 7/23/2008



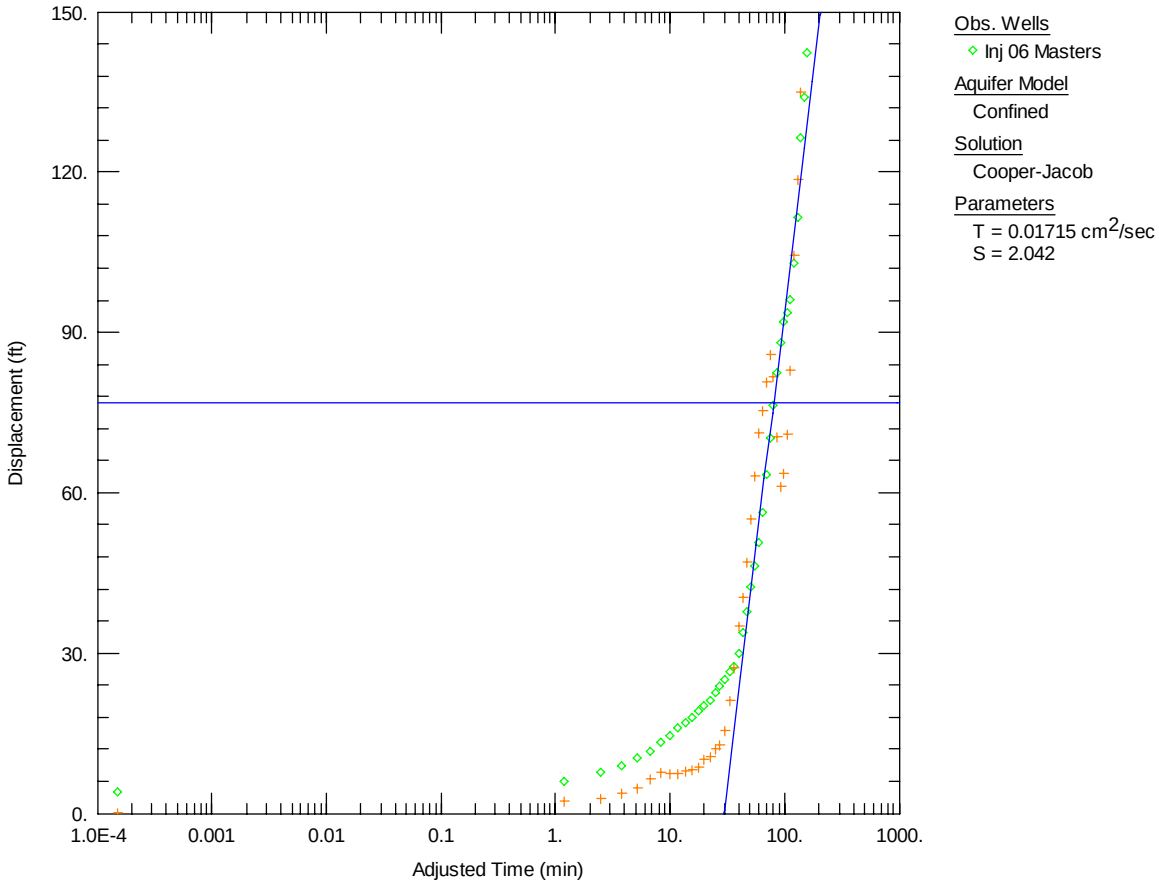


Inj 05 Rohr, 7/28/2008

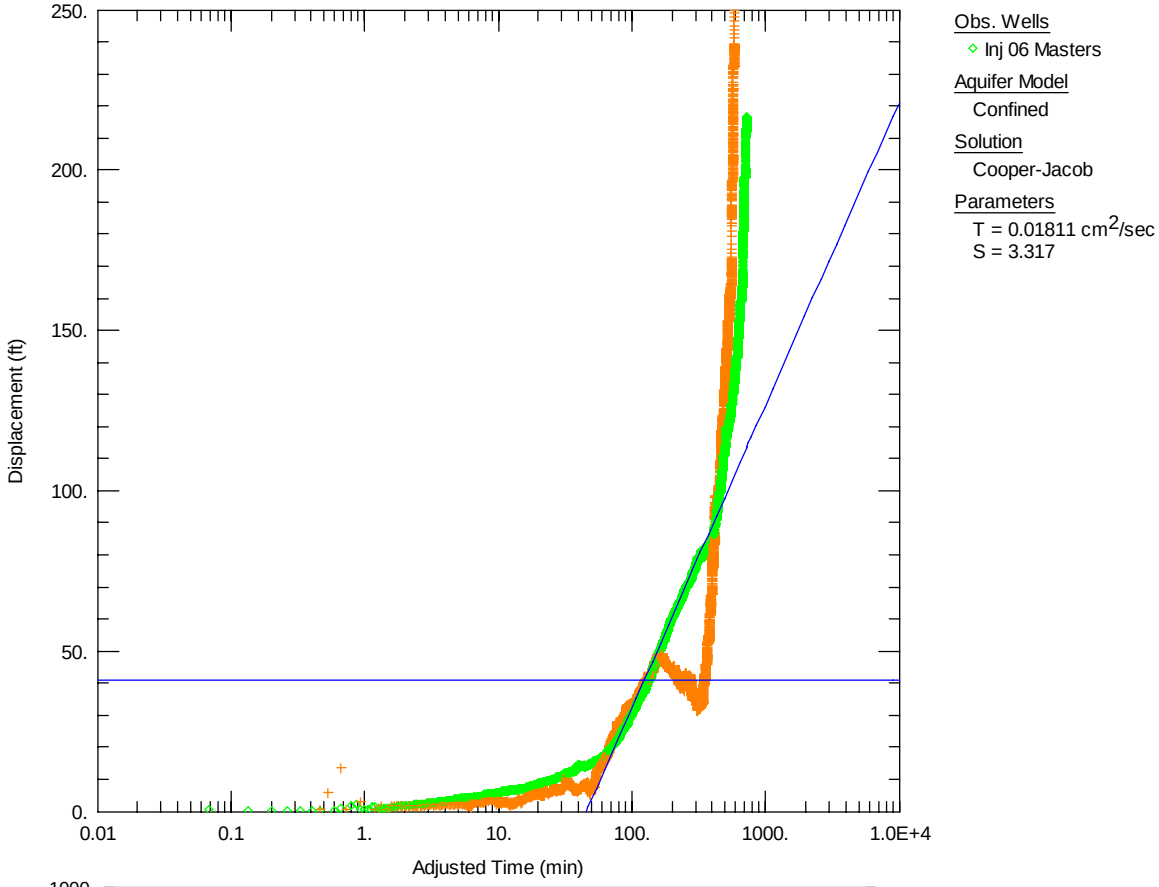


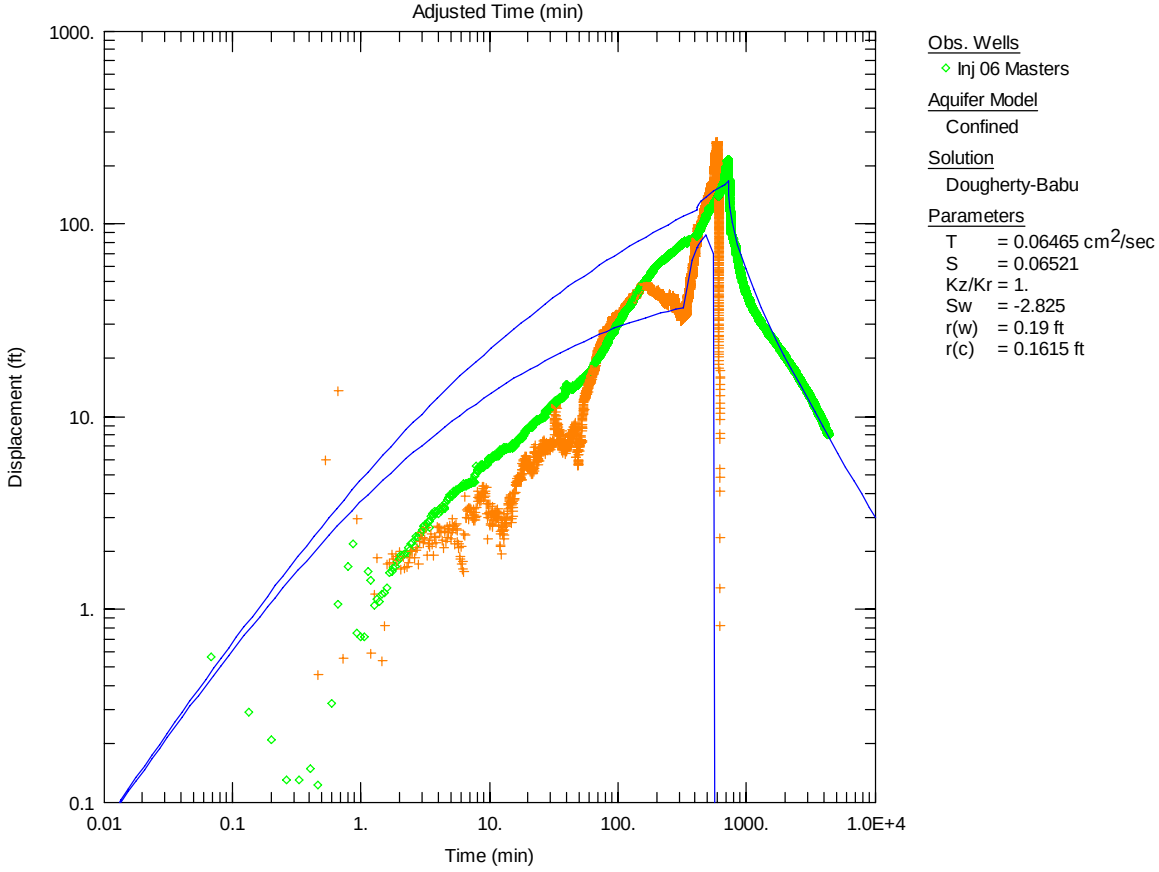


Inj 06 Masters, 7/13/2008

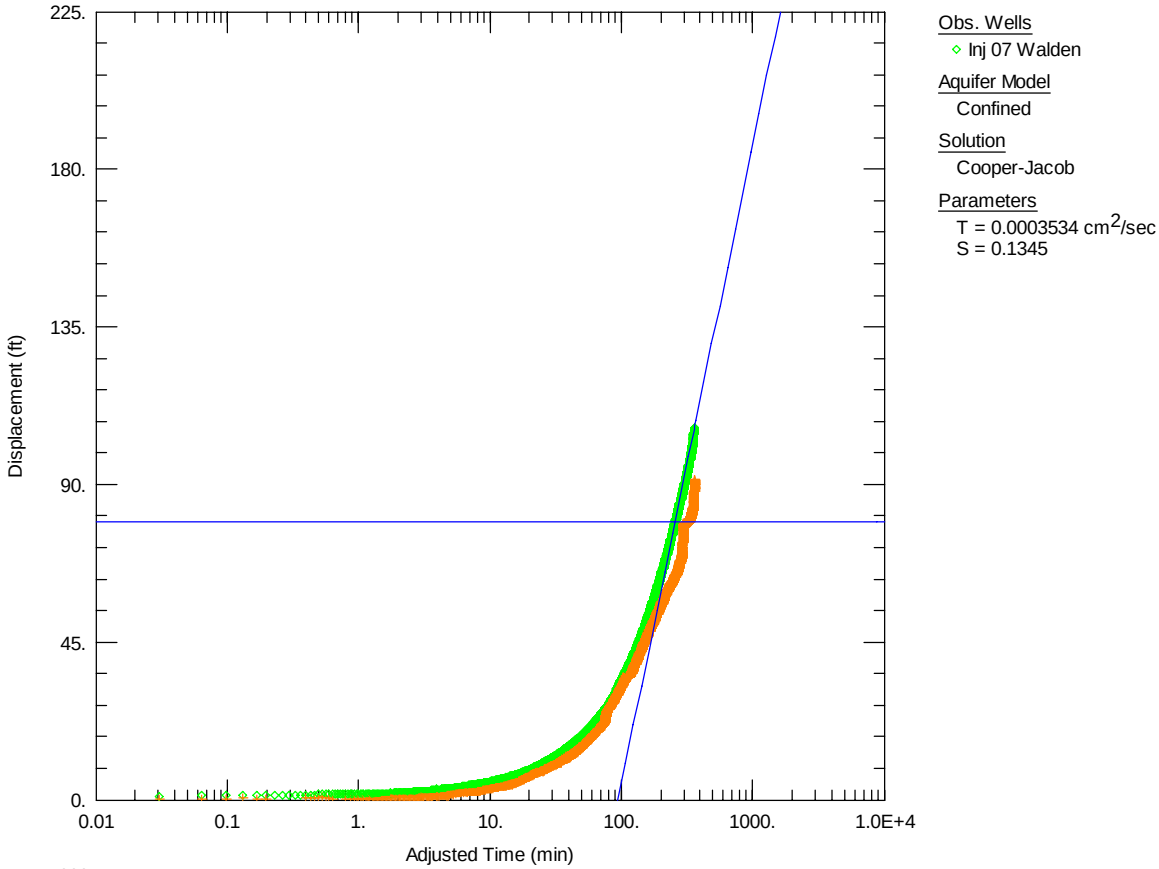


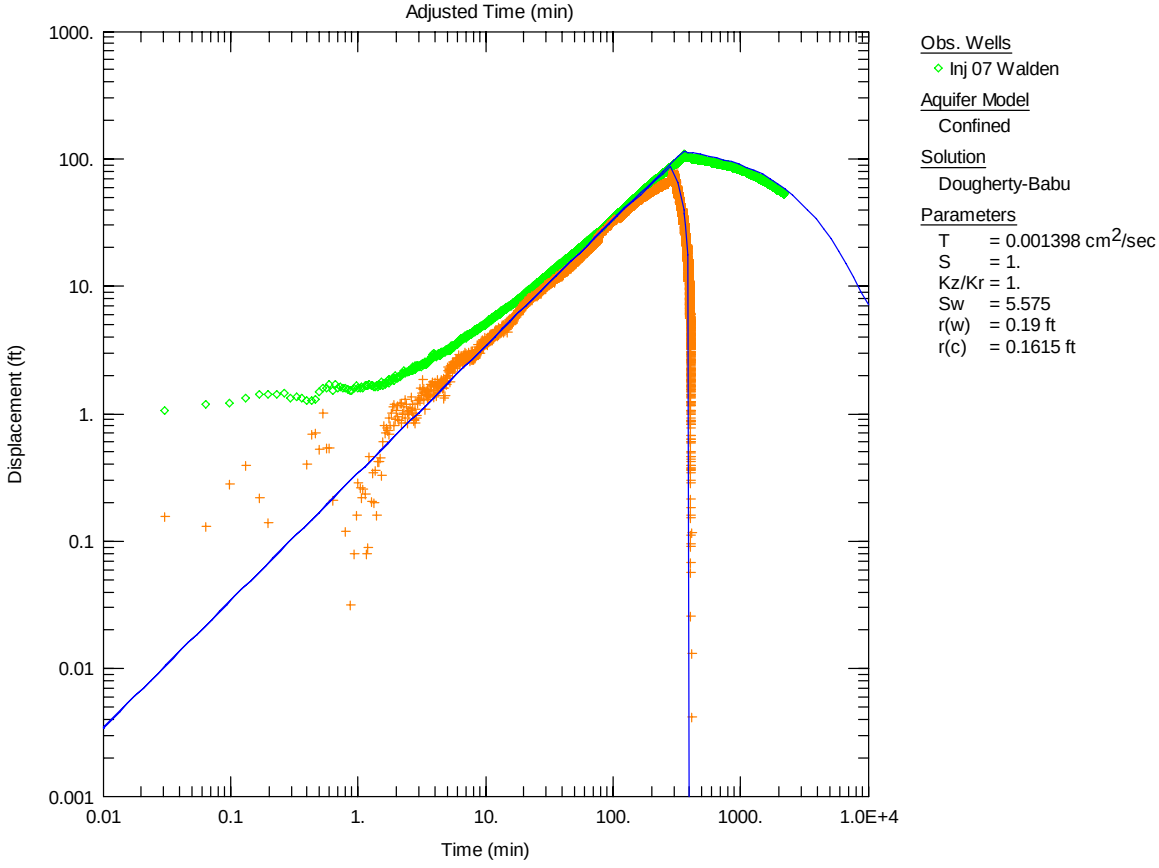
Inj 06 Masters, 7/15/2008



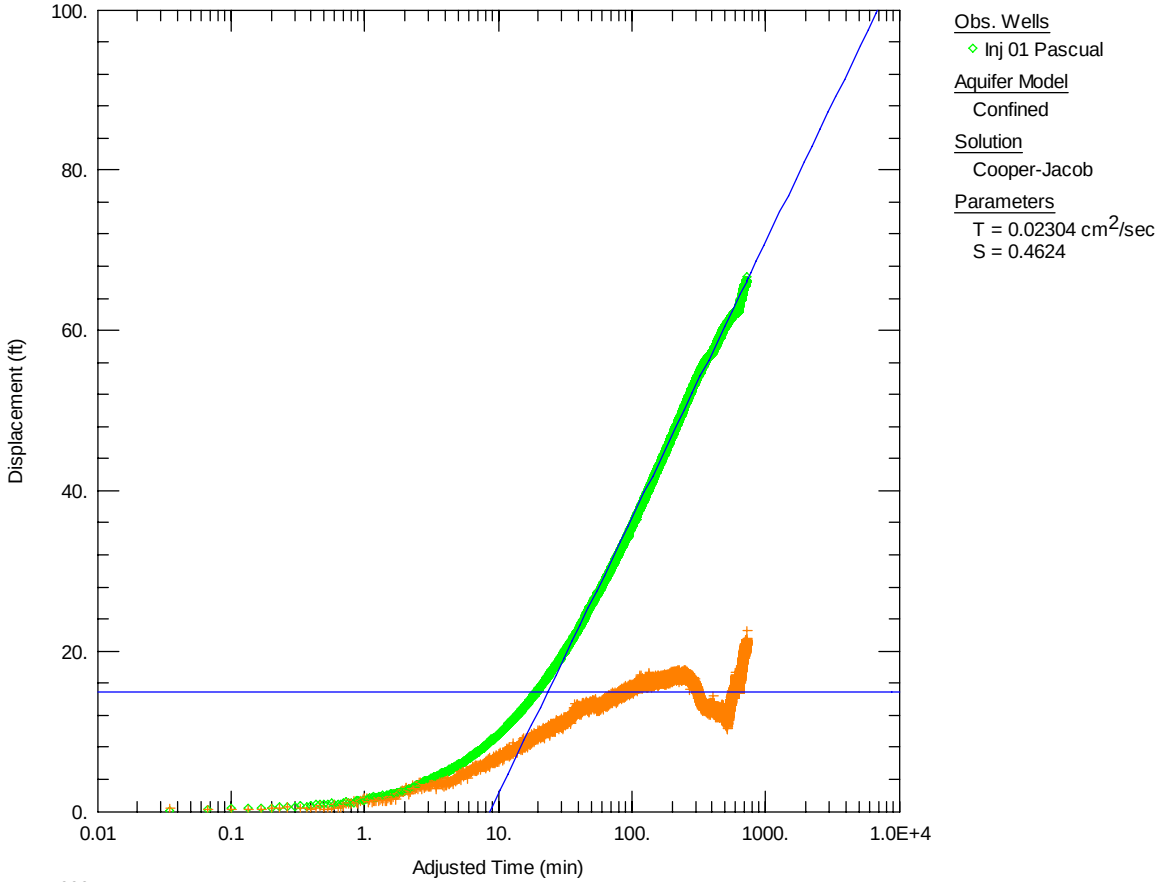


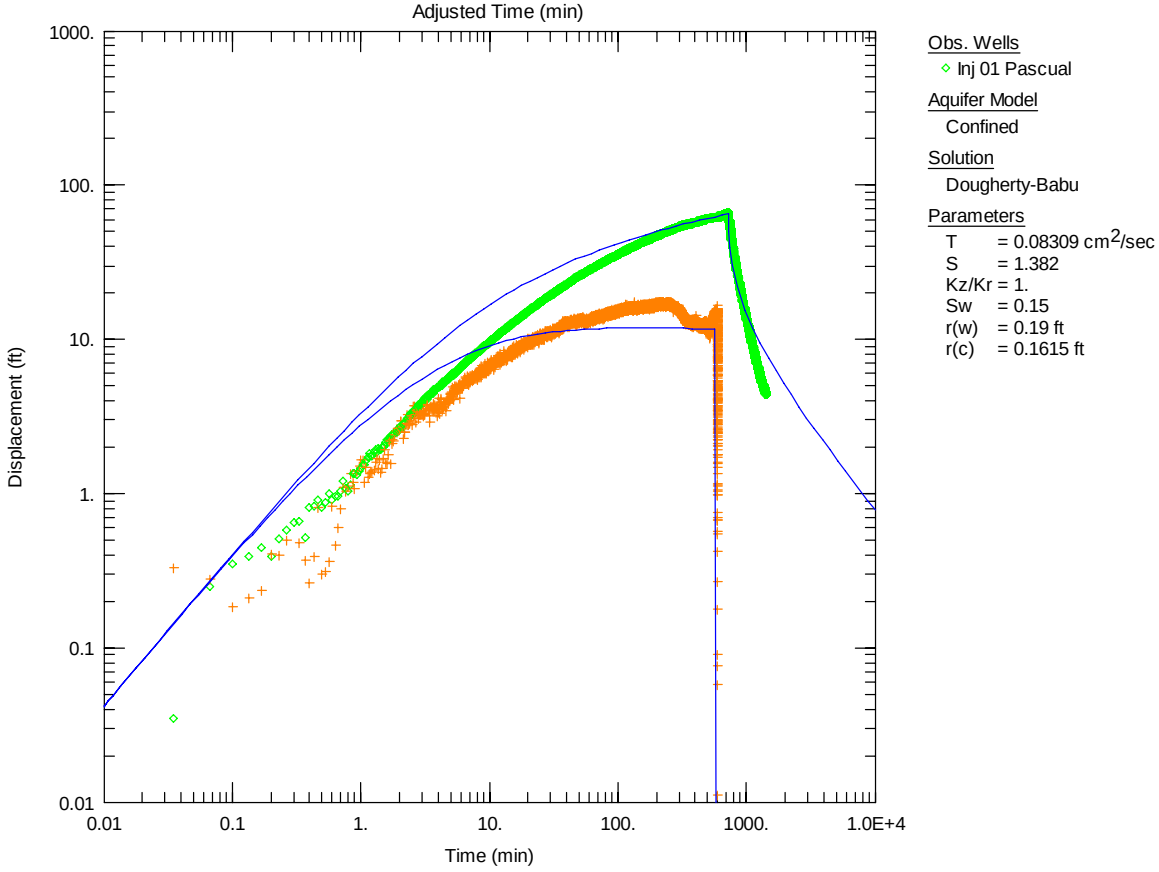
Inj 07 Walden 7/29/08



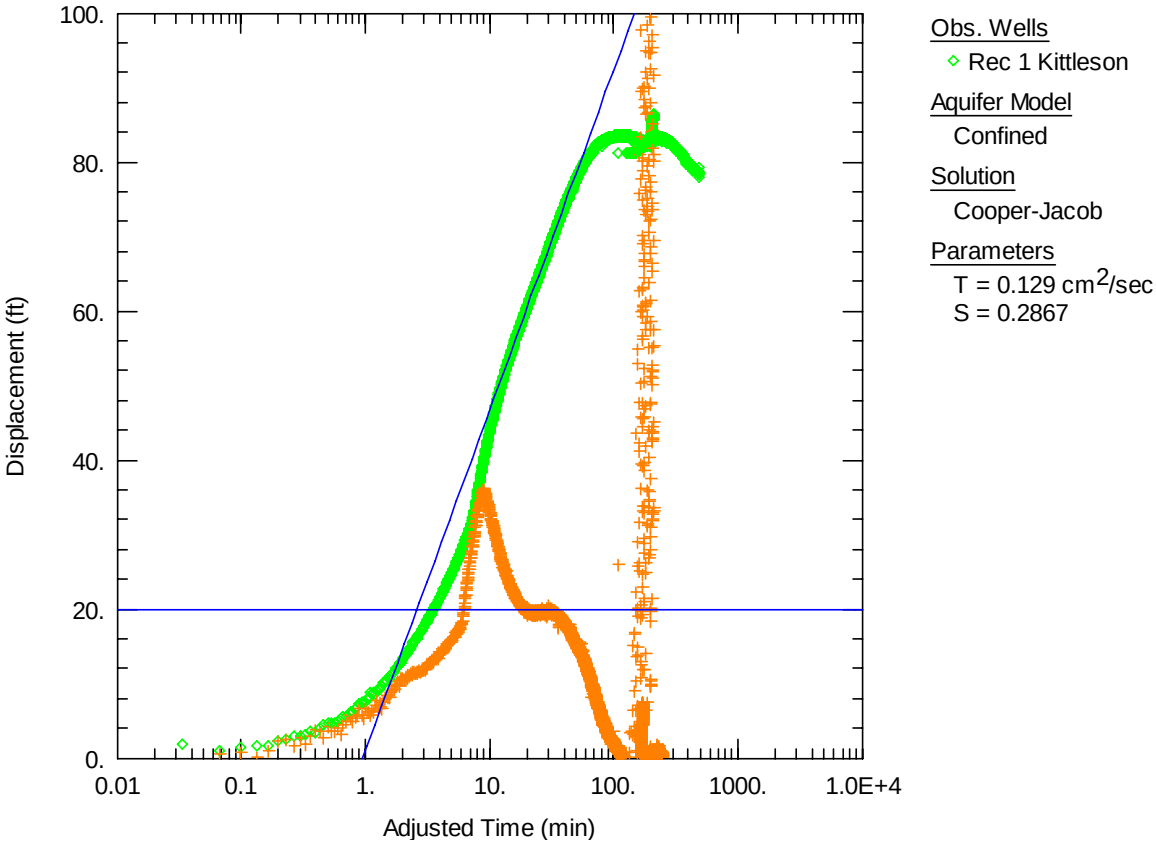


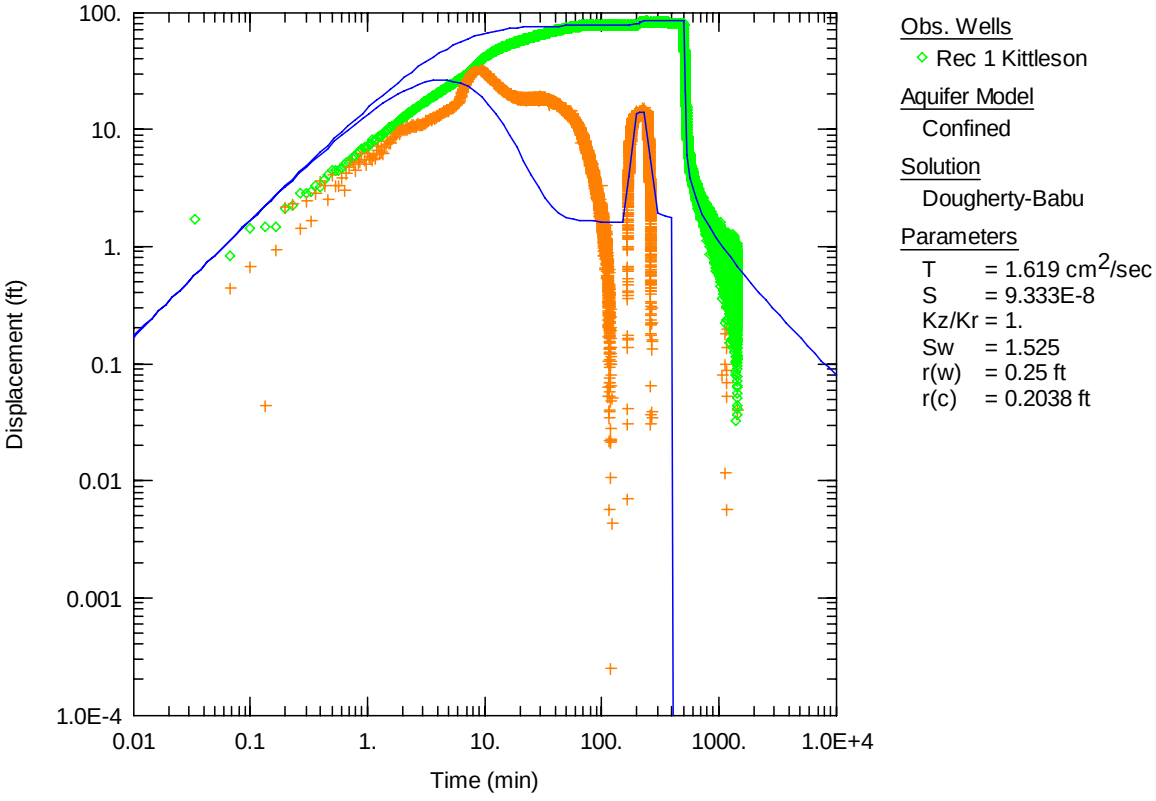
Inj 01 Pascual, 7/31/2008



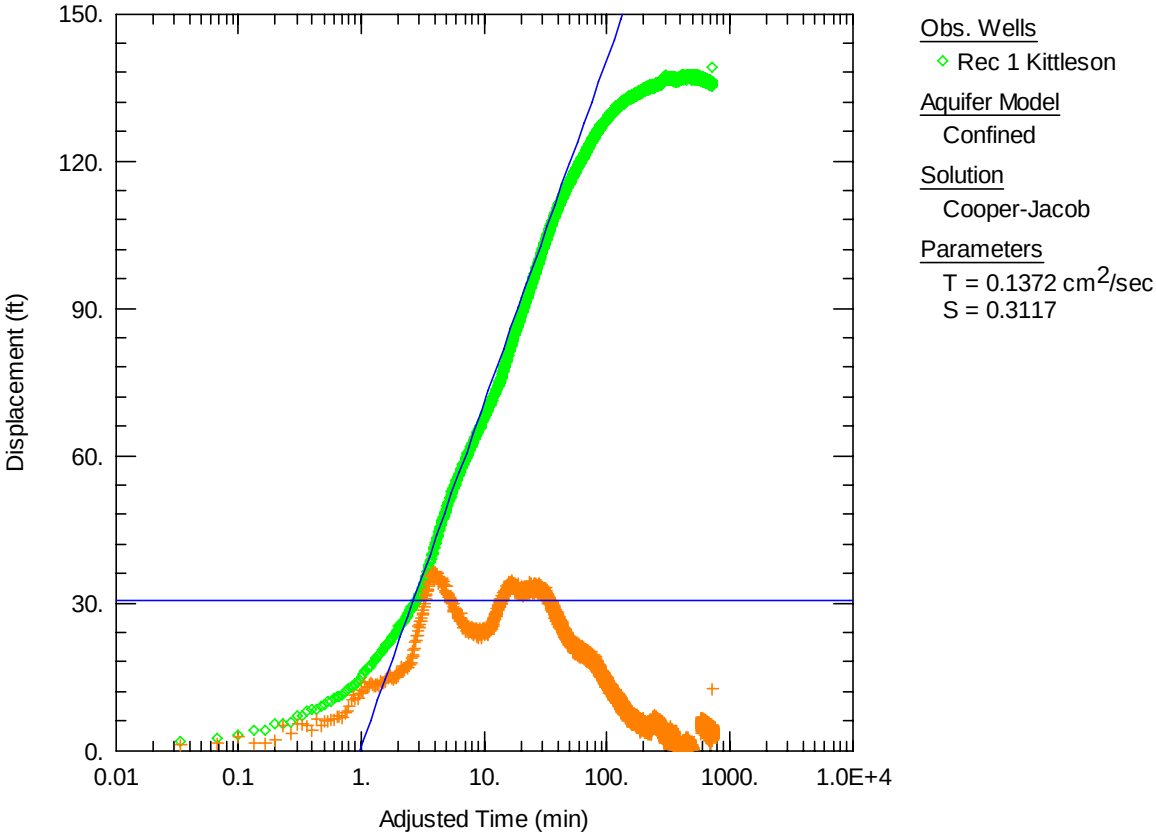


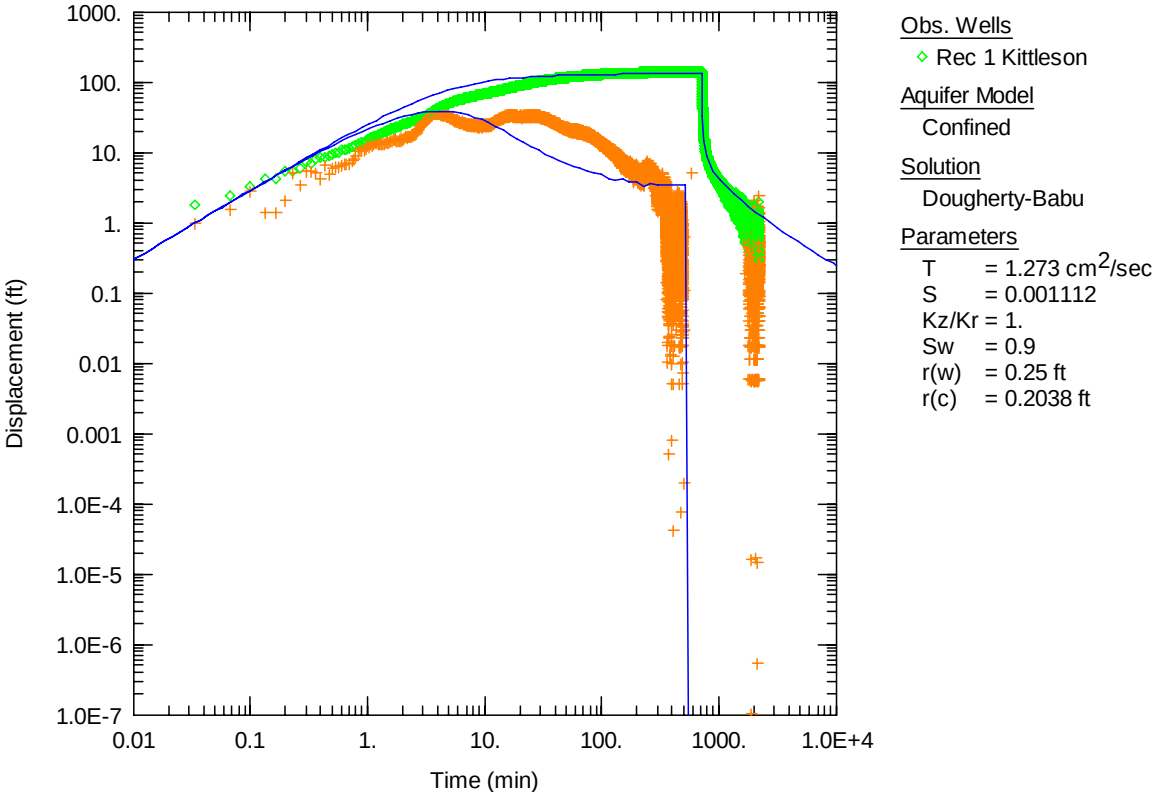
Rec 1 Kittleson, 7/8/2008



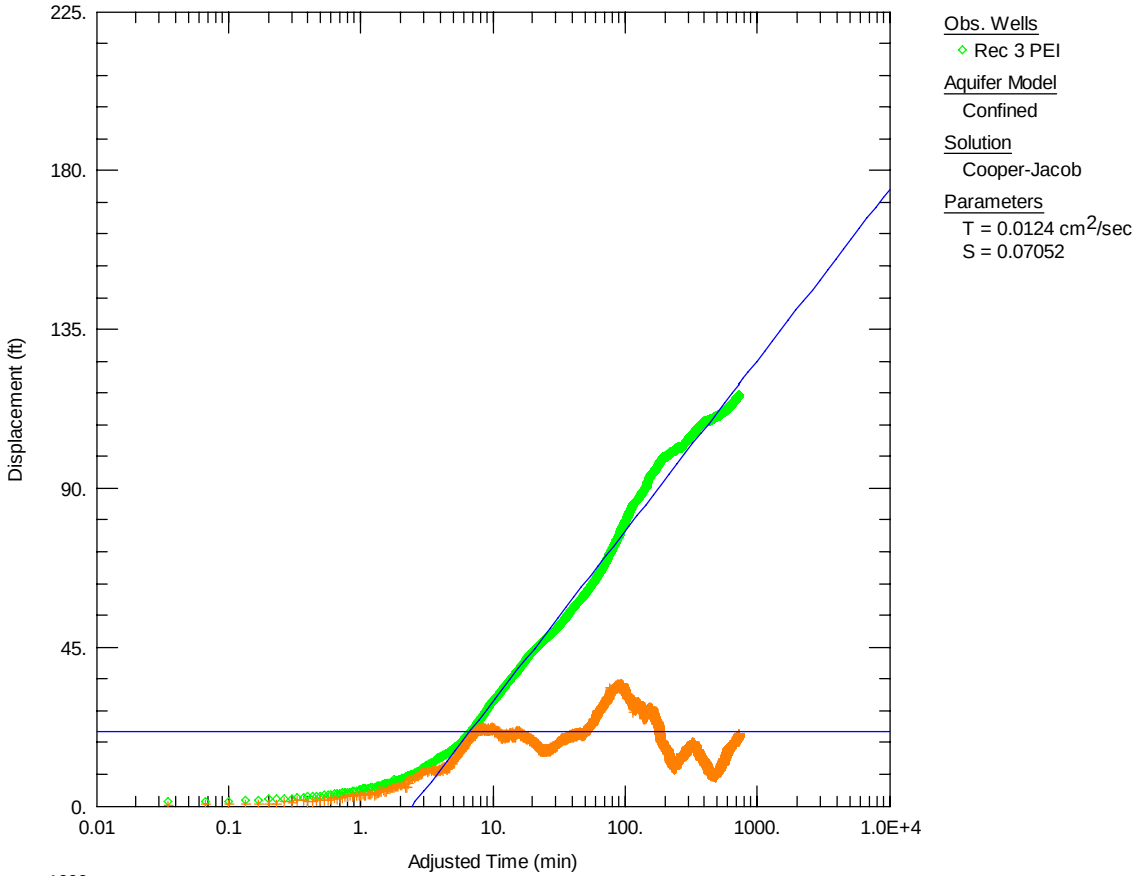


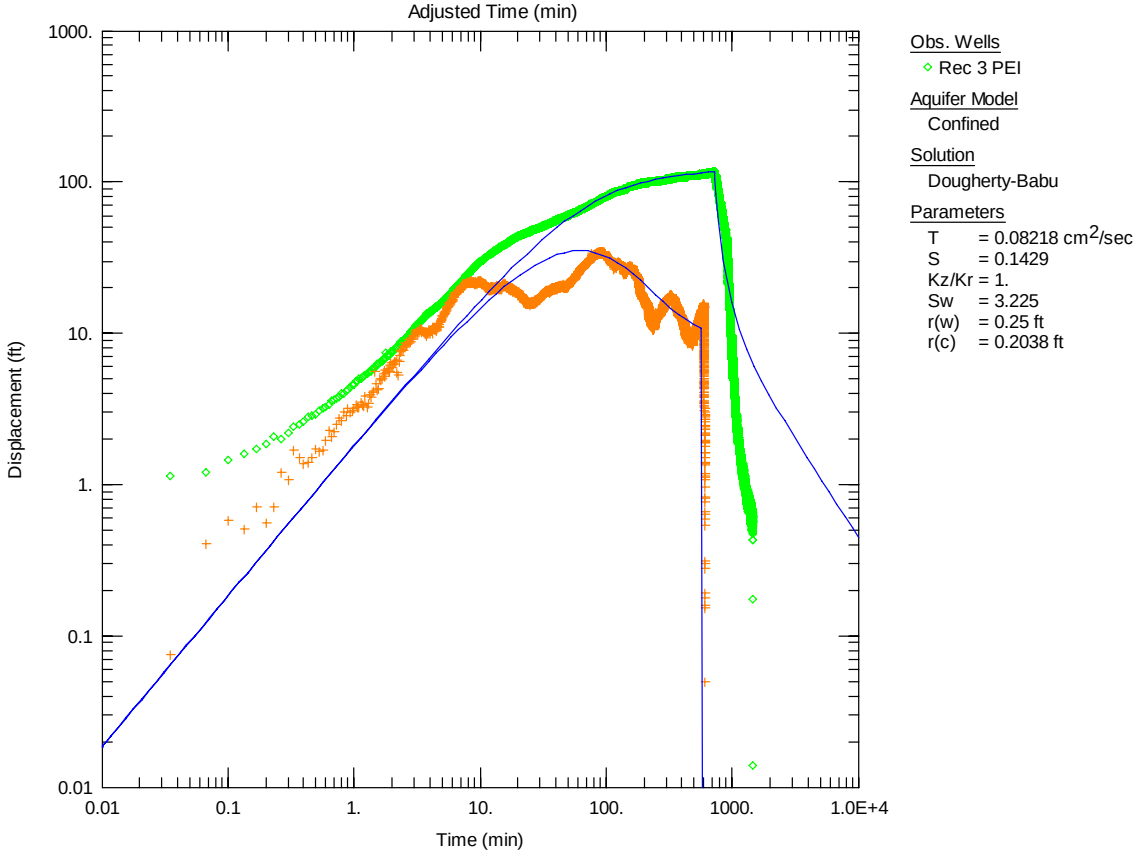
Rec 1 Kittleson, 8/4/2008



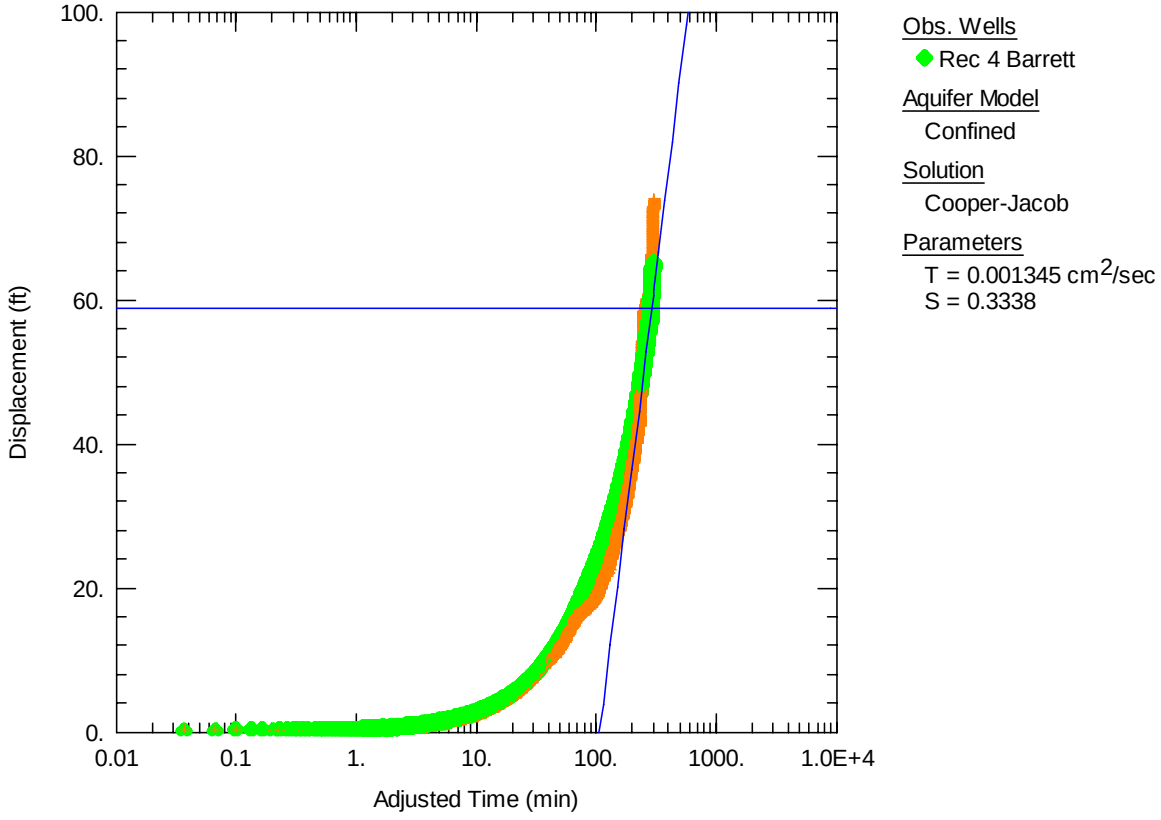


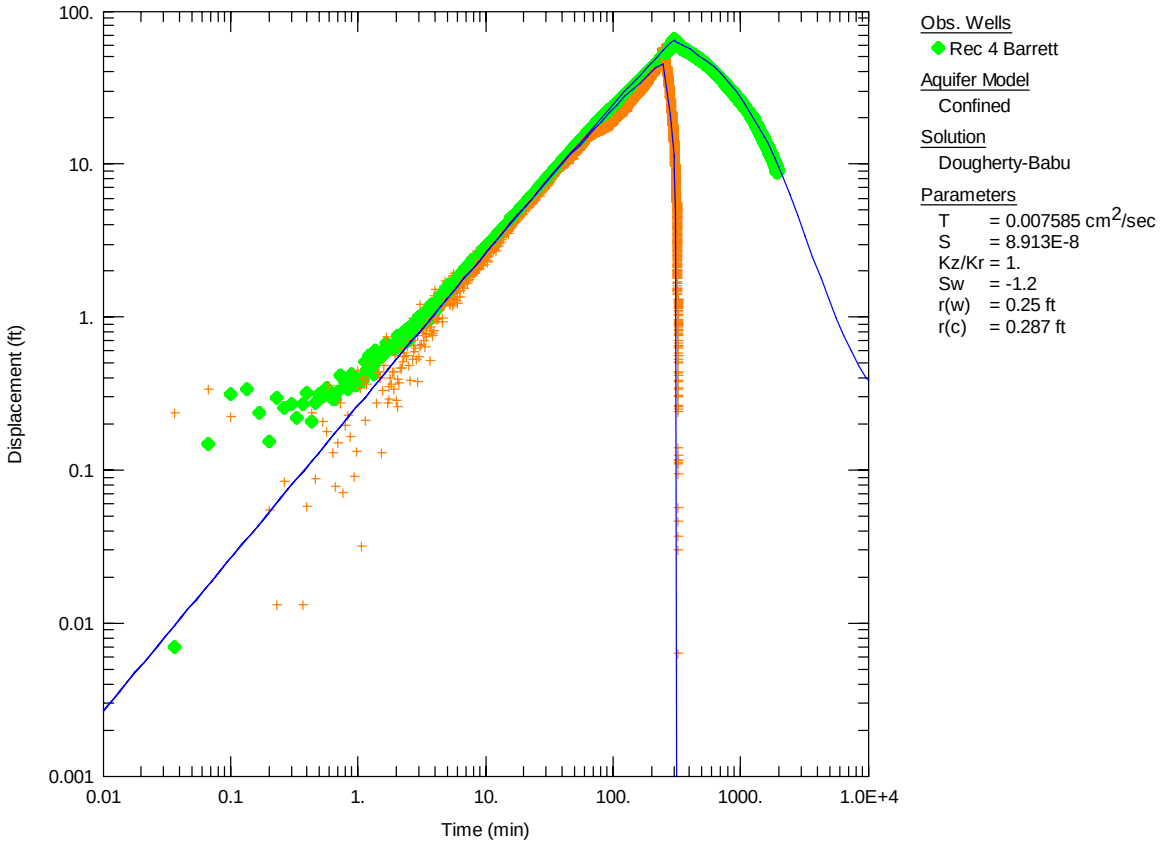
Rec 3 PEI, 8/25/2008





Rec 4 Barrett, 7/10/2008





APPENDIX C

Field Monitored Gas Data

Well ID: Kittleson Rec. 1 - 1st Test								
Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/8/08	7:37	44.6	>100	93	0.0	6.5	0	.758 Orifice
7/8/08	7:43	45.2	>100	87	0.0	7.8	0	
7/8/08	7:48	45.7	>100	68	0.0	7.2	0	
7/8/08	7:52	45.8	>100	95	0.0	2.6	0	
7/8/08	7:55	46.0	>100	86	0.0	3.4	0	
7/8/08	7:59	45.9	>100	95	0.5	5.6	0	
7/8/08	8:02	45.8	>100	100	0.0	2.2	0	
7/8/08	8:05	45.7	>100	97	0.5	1.8	0	
7/8/08	8:10	45.7	>100	68	0.0	7.8	0	
7/8/08	8:12	45.8	>100	87	0.5	2.5	0	
7/8/08	8:16	45.6	>100	97	0.0	1.5	0	
7/8/08	8:19	45.5	>100	95	0.0	3.2	0	
7/8/08	8:23	45.6	>100	93	0.0	0.8	0	
7/8/08	8:28	45.3	>100	95	0.0	7.2	0	
7/8/08	8:32	45.6	>100	98	0.0	1.2	0	
7/8/08	8:36	46.0	>100	100	2.2	0.0	0	
7/8/08	8:39	46.4	>100	98	1.0	3.5	0	
7/8/08	8:43	46.1	>100	100	2.0	0.4	0	
7/8/08	8:47	46.1	>100	88	1.0	2.0	0	
7/8/08	8:51	46.0	>100	89	0.0	2.8	0	
7/8/08	8:57	46.1	>100	94	2.0	3.0	0	
7/8/08	9:01	45.9	>100	98	2.5	0.5	0	
7/8/08	9:04	45.8	>100	95	0.5	1.5	0	
7/8/08	9:06	45.7	>100	98	2.5	1.8	0	
7/8/08	9:08	45.9	>100	97	3.0	1.8	0	
7/8/08	9:10	45.8	>100	93	1.8	3.8	0	
7/8/08	9:13	45.9	>100	93	1.5	3.8	0	
7/8/08	9:16	45.7	>100	94	2.0	2.4	0	
7/8/08	9:18	45.6	>100	94	2.2	2.8	0	
7/8/08	9:21	45.5	>100	96	2.0	2.1	0	
7/8/08	9:23	45.7	>100	94	2.8	1.8	0	
7/8/08	9:26	45.8	>100	95	2.5	2.6	0	
7/8/08	9:28	45.9	>100	94	1.5	1.8	0	
7/8/08	9:30	45.8	>100	95	3.0	4.1	0	
7/8/08	9:32	46.1	>100	95	1.8	2.6	0	
7/8/08	11:12	45.2	>100	74	3.0	4.6	0	Windy
7/8/08	11:39		>100	83	4.0	6.8	0	instrument failure
7/8/08	12:15	44.3	76	4	3.0	6.3	0	
7/8/08	12:52	44.3	>100	0	3.5	6.8**	0	
7/8/08	13:10	44.3	77	4	0.0	19.9	0	
7/8/08	13:43	43.6	>100	34	0.0	12.7	0	
7/8/08	14:06	43.6	>100	90	3.2	?	0	
7/8/08	15:01	42.8	>100	85	2.0	6.0	0	

Well ID: Kittleson Rec. 1 - 1st Test

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/8/08	7:37	1"	99	5.0	0	19.3	0	1/8" Orifice plate
7/8/08	7:41	0.5	20	1.0	0	20.7	0	
7/8/08	7:46	0.0	40	2.0	0	20.3	0	
7/8/08	7:49	0.0	22	1.1	0	20.9	0	
7/8/08	7:52	0.0	41	2.1	0	20.3	0	
7/8/08	7:57	0.0	31	1.6	0	20.7	0	
7/8/08	8:00	0.0	27	1.4	0	20.7	0	
7/8/08	8:03	0.0	17	0.9	0	20.9	0	
7/8/08	8:07	0.0	30	1.5	0	20.7	0	
7/8/08	8:11	0.0	42	2.1	0	19.8	0	
7/8/08	8:14	0.0	17	0.9	0	20.7	0	
7/8/08	8:17	0.0	19	1.0	0	20.9	0	
7/8/08	8:21	0.0	43	2.2	0	20.4	0	
7/8/08	8:25	0.0	15	0.8	0	20.9	0	
7/8/08	8:30	0.0	5	0.3	0	20.9	0	
7/8/08	8:34	0.0	8	0.4	0	20.9	0	
7/8/08	8:37	0.0	13	0.7	0	20.9	0	
7/8/08	8:40	0.0	23	1.2	0	20.7	0	
7/8/08	8:45	0.0	14	0.7	0	20.9	0	
7/8/08	8:48	0.0	21	1.1	0	20.9	0	
7/8/08	8:53	0.0	14	0.7	0	20.9	0	
7/8/08	8:58	0.0	11	0.6	0	20.9	0	
7/8/08	9:02	0.0	25	1.3	0	20.7	0	
7/8/08	9:05	0.0	18	0.9	0	20.7	0	
7/8/08	9:08	0.0	20	1.0	0	20.7	0	
7/8/08	9:09	0.0	24	1.2	0	20.7	0	
7/8/08	9:12	0.0	32	1.6	0	20.7	0	
7/8/08	9:14	0.0	41	2.1	0	20.2	0	
7/8/08	9:17	0.0	23	1.2	0	20.7	0	
7/8/08	9:19	0.0	23	1.2	0	20.9	0	
7/8/08	9:21	0.0	19	1.0	0	20.9	0	
7/8/08	9:23	0.0	24	1.2	0	20.9	0	
7/8/08	9:26	0.0	18	0.9	0	20.9	0	
7/8/08	9:28	0.0	18	0.9	0	20.9	0	
7/8/08	9:31	0.0	42	2.1	0	20.2	0	
7/8/08	11:05	0.0	12	0.6	0	20.7	0	
7/8/08	11:37	0.0	4	0.2	0	20.9	0	
7/8/08	12:10	0.0	0	0.0	0	20.9	0	
7/8/08	12:46	0.0	0	0.0	0	22.4	0	
7/8/08	13:07	0.0	9	0.5	0	20.5	0	
7/8/08	13:40	0.0	0	0.0	0	20.9	0	
7/8/08	14:04	0.0	0	0.0	0	20.9	0	
7/8/08	14:59	0.0	0	0.0	0	20.9	0	

Well ID: Barrett Rec. 4

Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/10/08	9:49	3.3	>100	12	0	16.0	0	0.250 orifice
7/10/08	9:54	3.3	>100	44	0	10.0	0	
7/10/08	10:00	3.5	>100	35	0	18.2	0	
7/10/08	10:05	3.6	>100	31	0	18.6	0	
7/10/08	10:09	3.7	>100	32	0	16.5	0	
7/10/08	10:13	3.8	>100	31	0	18.4	0	
7/10/08	10:15	3.8	>100	39	0	15.2	0	
7/10/08	10:18	3.9	>100	22	0	8.9	0	
7/10/08	10:22	3.9	>100	38	0	8.9	0	
7/10/08	10:24	4.0	>100	38	0	10.6	0	
7/10/08	10:27	4.0	>100	27	0	17.1	0	
7/10/08	10:32	4.1	>100	72	0	18.1	0	
7/10/08	10:34	4.1	>100	21	0	15.7	0	
7/10/08	10:38	4.1	>100	16	0	17.9	0	
7/10/08	10:40	4.1	>100	10	0	16.8	0	
7/10/08	10:42	4.1	>100	35	0	14.4	0	
7/10/08	10:44	4.2	>100	56	0	17.6	0	
7/10/08	10:47	4.2	>100	5	0	14.4	0	
7/10/08	10:50	4.2	>100	4	0	18.3	0	
7/10/08	10:53	4.2	>100	64	0	16.2	0	
7/10/08	10:59	4.2	>100	73	0	17.3	0	
7/10/08	11:04	4.2	>100	65	0	15.8	0	
7/10/08	11:07	4.2	>100	46	0	13.5	0	
7/10/08	11:10	4.2	>100	39	0	17.8	0	
7/10/08	11:14	4.2	>100	6	0	17.2	0	
7/10/08	11:17	4.2	>100	46	0	13.0	0	
7/10/08	11:19	4.2	>100	46	0	16.1	0	
7/10/08	11:22	4.2	>100	6	0	18.9	0	
7/10/08	11:26	4.2	>100	34	0	19.6	0	
7/10/08	11:29	4.2	>100	48	0	8.5	0	
7/10/08	11:33	4.2	>100	31	0	14.2	0	
7/10/08	11:37	4.2	>100	49	0	12.1	0	
7/10/08	11:39	4.2	>100	44	0	12.8	0	
7/10/08	11:42	4.2	>100	42	0	15.5	0	
7/10/08	11:45	4.2	>100	59	0	12.1	0	
7/10/08	11:48	4.2	>100	64	0	18.1	0	
7/10/08	12:15	2.9	>100	37	0	13.5	0	
7/10/08	12:45	4.1	>100	34	0	14.5	0	
7/10/08	13:14	4.1	>100	63	3.0	9.8	0	
7/10/08	13:46	4.1	>100	61	0.5	9.2	0	
7/10/08	14:16	4.1	>100	68	0	12.5	0	
7/10/08	14:59	4.2	>100	22	3.0	13.3	0	

Well ID: Barrett Rec. 4

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/10/08	9:52	0	0	0	0	20.9	0	1/8" Orifice
7/10/08	9:56	0	0	0	0	21.2	0	
7/10/08	10:02	0	0	0	0	21.2	0	
7/10/08	10:07	0	0	0	0	20.9	0	
7/10/08	10:11	0	0	0	0	20.9	0	
7/10/08	10:14	0	0	0	0	20.9	0	
7/10/08	10:16	0	0	0	0	20.9	0	
7/10/08	10:19	0	0	0	0	20.9	0	
7/10/08	10:22	0	0	0	0	20.9	0	
7/10/08	10:25	0	0	0	0	20.9	0	
7/10/08	10:28	0	0	0	0	20.9	0	
7/10/08	10:33	0	0	0	0	20.9	0	
7/10/08	10:36	0	0	0	0	20.9	0	
7/10/08	10:38	0	0	0	0	20.9	0	
7/10/08	10:40	0	0	0	0	20.9	0	
7/10/08	10:43	0	0	0	0	20.9	0	
7/10/08	10:45	0	0	0	0	20.9	0	
7/10/08	10:48	0	0	0	0	20.9	0	
7/10/08	10:51	0	0	0	0	20.9	0	
7/10/08	10:56	0	0	0	0	20.9	0	
7/10/08	11:01	0	0	0	0	20.9	0	
7/10/08	11:05	0	0	0	0	20.9	0	
7/10/08	11:08	0	0	0	0	20.9	0	
7/10/08	11:11	0	0	0	0	20.9	0	
7/10/08	11:15	0	0	0	0	20.9	0	
7/10/08	11:18	0	0	0	0	20.9	0	
7/10/08	11:20	0	0	0	0	20.9	0	
7/10/08	11:23	0	0	0	0	20.9	0	
7/10/08	11:26	0	0	0	0.5	20.9	0	
7/10/08	11:30	0	0	0	2.0	20.9	0	
7/10/08	11:34	0	0	0	0.5	20.9	0	
7/10/08	11:37	0	0	0	0	20.9	0	
7/10/08	11:40	0	0	0	0	20.9	0	
7/10/08	11:43	0	0	0	0	20.9	0	
7/10/08	11:46	0	0	0	0	20.9	0	
7/10/08	11:50	0	0	0	0	20.9	0	
7/10/08	12:13	0	0	0	0	20.9	0	
7/10/08	12:42	0	0	0	0	20.9	0	
7/10/08	13:09	0	0	0	3.0	20.9	0	
7/10/08	13:39	0	0	0	3.5	20.9	0	
7/10/08	14:09	0	0	0	6.0	20.9	0	
7/10/08	14:55	0	0	0	0	20.9	0	

Well ID: Inj 06 Masters - 1st Test								
Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/13/08	8:15	2"	>100	90				1/8" orifice
7/13/08		0.0	>100	28	0.0	10.2	0	
7/13/08	8:24	0.0	>100	37	0.0	17.9	0	
7/13/08	8:26	0.0	>100	81	1.0	5.7	0	
7/13/08	8:30	0.0	>100	83	0.0	6.2	0	
7/13/08	8:32	0.0	>100	30	0.0	9.0	0	
7/13/08	8:34	0.5	>100	31	0.0	13.0	0	
7/13/08	8:38	0.5	>100	48	0.0	13.0	0	
7/13/08	8:40	0.5	>100	32	0.0	17.0	0	
7/13/08	8:42	0.0	>100	17	0.0	17.9	0	
7/13/08	8:44	0.0	>100	44	0.0	16.5	0	
7/13/08	8:45	0.5	>100	33	1.0	13.2	0	
7/13/08	8:49	0.0	>100	13	0.0	15.8	0	
7/13/08	8:52	0.0	>100	7	0.0	19.8	0	
7/13/08	8:53	0.0	100	2	0.0	19.4	0	
7/13/08	8:54	0.0	>100	52	0.0	18.2	0	
7/13/08	8:56	0.0	>100	43	0.0	13.7	0	
7/13/08	8:57	0.5	>100	33	2.0	12.9	0	
7/13/08	8:58	2.0	>100	55	0.0	12.9	0	
7/13/08	9:00	3.5	>100	47	0.0	14.1	0	
7/13/08	9:03	4.0	>100	48	0.0	10.9	0	
7/13/08	9:05	4.5	>100	48	0.0	14.0	0	
7/13/08	9:06	5.8	>100	31	1.6	11.7	0	
7/13/08	9:07	10.0	>100	70	0.0	8.3	0	
7/13/08	9:08	12.0	>100	48	0.0	9.8	0	
7/13/08	9:11	12.5	>100	73	0.0	7.9	0	
7/13/08	9:13	13.0	>100	46	0.0	12.0	0	
7/13/08	9:15	13.0	>100	75	0.0	10.0	0	
7/13/08	9:17	13.0	>100	33	0.0	15.5	0	
7/13/08	9:19	19.5	>100	28	0.0	10.2	0	
7/13/08	9:21	27.0	>100	57	0.0	12.1	0	
7/13/08	9:22	29.0	>100	58	0.0	11.9	0	
7/13/08	9:24	32.0	>100	28	0.0	14.8	0	
7/13/08	9:25	35.0	>100	22	0.0	15.0	0	
7/13/08	9:28	41.0	>100	18	0.0	18.0	0	
7/13/08	9:50	24.0	29	1.5	0.0	20.9	0	
7/13/08	10:20	7.0	7	0.4	0.0	20.9	0	
7/13/08	10:50	4.0	5	0.3	0.0	20.9	0	
7/13/08	11:20	5.0	0	0.0	0.0	20.9	0	

Well ID: Inj 06 Masters - 1st Test

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/13/08	8:18	0.0	53	2.7	1.0	20.9		1/8" orifice
7/13/08	8:23		12	0.6	0.5	20.9	0.0	
7/13/08	8:28		2	0.1	0.5	20.9	0.0	
7/13/08	8:30	1.0	4	0.2	0.5	20.9	0.0	
7/13/08	8:31		22	1.1	0.5	20.9	0.0	
7/13/08	8:34		22	1.1	0.5	20.9	0.0	
7/13/08	8:36	0.0	6	0.3	0.0	20.9	0.0	
7/13/08	8:40	1.0	18	0.9	2.0	20.9	0.0	
7/13/08	8:42	0.0	17	0.9	2.0	20.9	0.0	
7/13/08	8:44	0.0	15	0.8	2.0	20.9	0.0	
7/13/08	8:46	0.0	10	0.5	3.0	20.9	0.0	
7/13/08	8:48	0.0	9	0.5	3.0	20.9	0.0	
7/13/08	8:50	0.0	18	0.9	3.5	20.9	0.0	
7/13/08	8:52	0.0	22	1.1	4.0	20.9	0.0	
7/13/08	8:55	0.0	13	0.7	3.0	20.9	0.0	
7/13/08	8:56	0.0	10	0.5	3.8	20.9	0.0	
7/13/08	8:57	0.0	27	1.4	1.0	20.9	0.0	
7/13/08	8:59	0.0	31	1.6	4.5	20.9	0.0	
7/13/08	9:00	0.0	35	1.8	3.5	20.9	0.0	
7/13/08	9:02	0.0	13	0.7	3.5	20.9	0.0	
7/13/08	9:03	0.0	17	0.9	3.0	20.9	0.0	
7/13/08	9:05	0.0	31	1.6	5.0	20.9	0.0	
7/13/08	9:06	0.0	28	1.4	4.0	20.9	0.0	
7/13/08	9:08	0.5	30	1.5	5.0	20.9	0.0	
7/13/08	9:10	0.0	11	0.6	4.0	20.9	0.0	
7/13/08	9:13	0.5	20	1.0	2.0	20.9	0.0	
7/13/08	9:14	0.0	31	1.5	1.5	20.6	0.0	
7/13/08	9:16	0.5	23	1.2	4.0	20.9	0.0	
7/13/08	9:18	0.5	27	1.4	3.0	20.9	0.0	
7/13/08	9:20	0.5	13	0.7	3.0	20.9	0.0	
7/13/08	9:21	0.5	27	1.3	4.5	20.9	0.0	
7/13/08	9:23	0.5	43	2.2	4.0	20.9	0.0	
7/13/08	9:24	0.5	13	0.7	4.0	20.0	0.0	
7/13/08	9:27	0.5	10	0.5	1.5	20.9	0.0	
7/13/08	9:30	0.5	14	0.7	4.0	20.9	0.0	
7/13/08	9:50	0.5	4	0.2	0.0	20.9	0.0	
7/13/08	10:20	0.0	16	0.8	0.50	20.9	0.0	
7/13/08	10:50	0.0	0	0	1.50	20.9	0.0	
7/13/08	11:20	0.0	0	0	0.00	20.9	0.0	

Well ID: Inj 06 Masters - 2nd Test								
Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/15/08	6:50	0.0	>100	17	0.0	18.0	0	
7/15/08	6:59	0.0	>100	16	0.0	14.9	0	
7/15/08	7:01	0.0	>100	33	0.0	14.3	0	
7/15/08	7:03	0.0	>100	51	0.0	10.1	0	
7/15/08	7:05	0.0	>100	43	0.0	12.3	0	
7/15/08	7:07	0.0	>100	31	0.0	14.6	0	
7/15/08	7:09	0.0	>100	42	0.0	13.5	0	
7/15/08	7:10	0.0	>100	16	0.0	18.0	0	
7/15/08	7:12	0.0	>100	41	0.0	13.3	0	
7/15/08	7:13	0.0	>100	30	0.0	14.8	0	
7/15/08	7:14	0.0	>100	38	0.0	13.7	0	
7/15/08	7:15	0.0	>100	34	0.0	13.8	0	
7/15/08	7:17	0.0	>100	23	0.0	16.5	0	
7/15/08	7:19	0.0	>100	32	0.0	14.4	0	
7/15/08	7:21	0.0	>100	18	0.0	15.5	0	
7/15/08	7:23	0.0	>100	22	0.0	16.8	0	
7/15/08	7:24	0.0	>100	25	0.0	15.2	0	
7/15/08	7:25	0.0	>100	30	0.0	13.9	0	
7/15/08	7:26	0.0	>100	46	0.0	11.8	0	
7/15/08	7:28	0.0	>100	35	0.0	13.9	0	
7/15/08	7:29	0.0	>100	24	0.0	18.1	0	
7/15/08	7:31	0.0	>100	46	0.0	11.8	0	
7/15/08	7:33	0.0	>100	57	0.0	10.2	0	
7/15/08	7:35	0.0	>100	52	0.0	10.2	0	
7/15/08	7:37	0.0	>100	29	0.0	15.2	0	
7/15/08	7:38	0.0	>100	30	0.0	14.9	0	
7/15/08	7:40	0.0	>100	46	0.0	13.0	0	
7/15/08	7:42	0.0	>100	51	0.0	12.5	0	
7/15/08	7:48	0.0	>100	21	0.0	15.8	0	
7/15/08	7:49	0.0	>100	38	0.0	13.6	0	
7/15/08	7:50	0.0	>100	28	0.0	15.8	0	
7/15/08	7:52	0.0	>100	43	0.0	12.8	0	
7/15/08	7:53	0.0	>100	49	0.0	11.0	0	
7/15/08	7:55	0.0	>100	28	0.0	15.8	0	
7/15/08	7:56	0.0	>100	78	0.0	6.8	0	
7/15/08	8:25	11.0	42	2.1	0.0	27.7	0	
7/15/08	8:55	8.0	3	0.2	0.0	20.9	0	
7/15/08	9:25	10.0	5	0.3	0.0	21.2	0	
7/15/08	10:10	7.0	1	0.1	0.0	20.9	0	
7/15/08	10:55	5.0	2	0.1	0.0	22.3	0	
7/15/08	12:55	3.0	7	0.4	0.0	20.9	0	
7/15/08	15:55	1.0	0	0	0.0	22.3	0	
7/15/08	16:55	0.5	0	0	0.0	21.7	0	
7/15/08	17:55	0.0	0	0	0.0	20.9	0	

Well ID: Inj 06 Masters - 2nd Test

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/15/08	6:50	0.0	64	3.2	0.0	20.2	0.0	
7/15/08	6:58	0.0	7	0.4	0.0	20.9	0.0	
7/15/08	7:00	0.0	36	1.8	0.0	20.7	0.0	
7/15/08	7:02	0.0	8	0.4	0.0	20.9	0.0	
7/15/08	7:04	0.0	1	0.1	0.0	20.9	0.0	
7/15/08	7:06	0.0	4	0.2	0.0	20.9	0.0	
7/15/08	7:08	0.0	15	0.8	0.0	20.9	0.0	
7/15/08	7:09	0.0	13	0.7	0.0	20.9	0.0	
7/15/08	7:11	0.0	14	0.7	0.0	20.9	0.0	
7/15/08	7:12	0.0	8	0.4	0.0	20.9	0.0	
7/15/08	7:13	0.0	10	0.5	0.0	20.9	0.0	
7/15/08	7:15	0.0	13	0.7	0.0	20.9	0.0	
7/15/08	7:16	0.0	16	0.8	0.0	20.9	0.0	
7/15/08	7:18	0.0	90	4.5	0.0	19.4	0.0	
7/15/08	7:20	0.0	4	0.2	0.0	20.9	0.0	
7/15/08	7:22	0.0	17	0.9	0.0	20.9	0.0	
7/15/08	7:23	0.0	17	0.9	0.0	20.9	0.0	
7/15/08	7:25	0.0	13	0.7	0.0	20.9	0.0	
7/15/08	7:26	0.0	11	0.6	0.0	20.9	0.0	
7/15/08	7:27	0.0	15	0.8	0.0	20.9	0.0	
7/15/08	7:29	0.0	16	0.8	0.0	20.9	0.0	
7/15/08	7:30	0.0	50	2.5	0.0	19.8	0.0	
7/15/08	7:32	0.0	2	0.1	0.0	20.9	0.0	
7/15/08	7:34	0.0	2	0.1	0.0	20.9	0.0	
7/15/08	7:36	0.0	19	1.0	0.0	20.9	0.0	
7/15/08	7:37	0.0	32	1.6	0.0	20.9	0.0	
7/15/08	7:39	0.0	22	1.1	0.0	20.9	0.0	
7/15/08	7:40	0.0	31	1.6	0.0	20.9	0.0	
7/15/08	7:43	0.0	63	3.2	0.0	20.3	0.0	
7/15/08	7:48	0.0	19	1.0	0.0	20.9	0.0	
7/15/08	7:50	0.0	9	0.5	0.0	20.9	0.0	
7/15/08	7:51	0.0	19	1.0	0.0	20.9	0.0	
7/15/08	7:52	0.0	13	0.7	0.0	20.9	0.0	
7/15/08	7:54	0.0	21	1.1	0.0	20.9	0.0	
7/15/08	7:56	0.0	24	1.2	0.0	20.9	0.0	
7/15/08	8:25	0.0	32	1.6	0.0	21.7	0.0	
7/15/08	8:55	0.0	16	0.8	0.0	20.9	0.0	
7/15/08	9:25	0.0	23	1.2	3.0	20.9	0.0	
7/15/08	10:05	0.0	34	1.7	4.0	20.9	0.0	
7/15/08	10:55	0.0	38	1.9	4.5	21.7	0.0	
7/15/08	12:55	0.0	50	2.5	6.0	20.9	0.0	
7/15/08	15:55	0.0	0	0	0.0	22.3	0.0	
7/15/08	16:55	0.0	0	0	0.0	21.9	0.0	
7/15/08	17:55	0.0	0	0	0.0	20.9	0.0	

Well ID: Inj 03 Benevides								
Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/17/08	7:02	0	0	0	0	20.9	0	
7/17/08	7:04	0	0	0	0	20.9	0	
7/17/08	7:06	0	0	0	0	20.9	0	
7/17/08	7:07	0	0	0	0	20.9	0	
7/17/08	7:08	0	0	0	0	20.9	0	
7/17/08	7:10	0	0	0	0	20.9	0	
7/17/08	7:12	0	0	0	0	20.9	0	
7/17/08	7:13	0	0	0	0	20.9	0	
7/17/08	7:15	0	0	0	0	20.9	0	
7/17/08	7:16	0	0	0	0	20.9	0	
7/17/08	7:18	0	0	0	0	20.9	0	
7/17/08	7:20	0	0	0	0	20.9	0	
7/17/08	7:21	0	0	0	0	20.9	0	
7/17/08	7:23	0	0	0	0	20.9	0	
7/17/08	7:24	0	0	0	0	20.9	0	
7/17/08	7:25	0	0	0	0	20.9	0	
7/17/08	7:27	0	0	0	0	20.9	0	
7/17/08	7:29	0	0	0	0	20.9	0	
7/17/08	7:31	0	0	0	0	20.9	0	
7/17/08	7:32	0	0	0	0	20.9	0	
7/17/08	7:34	0	0	0	0	20.9	0	
7/17/08	7:35	0	0	0	0	20.9	0	
7/17/08	7:37	0	0	0	0	20.9	0	
7/17/08	7:38	0	0	0	0	20.9	0	
7/17/08	7:40	0	0	0	0	20.9	0	
7/17/08	7:41	0	0	0	0	20.9	0	
7/17/08	7:43	0	0	0	0	20.9	0	
7/17/08	7:44	0	0	0	0	20.9	0	
7/17/08	7:46	0	0	0	0	20.9	0	
7/17/08	7:47	0	0	0	0	20.9	0	
7/17/08	7:48	0	0	0	0	20.9	0	
7/17/08	7:50	0	0	0	0	20.9	0	
7/17/08	7:51	0	0	0	0	20.9	0	
7/17/08	7:53	0	0	0	0	20.9	0	
7/17/08	7:55	0	0	0	0	20.9	0	
7/17/08	8:05	0	0	0	0	20.9	0	
7/17/08	8:30	0	0	0	0	20.9	0	
7/17/08	9:05	0	0	0	0	21.7	0	
7/17/08	9:30	0	0	0	0	23.2	0	
7/17/08	10:05	0	0	0	0	23.0	0	
7/17/08	10:30	0	0	0	0	20.9	0	
7/17/08	11:30	0	0	0	0	20.9	0	
7/17/08	12:30	0	0	0	0	20.9	0	
7/17/08	14:30	0	0	0	0	20.9	0	
7/17/08	16:30	0	0	0	0	20.9	0	

Well ID: Inj 03 Benevides

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/17/08	7:01	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:03	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:05	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:07	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:08	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:09	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:11	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:13	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:14	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:15	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:17	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:19	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:21	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:22	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:24	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:25	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:26	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:28	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:30	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:32	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:33	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:34	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:35	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:37	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:39	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:41	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:42	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:44	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:45	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:47	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:48	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:49	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:50	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:52	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	7:54	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	8:05	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	8:30	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	9:05	0.0	0.0	0.0	0.0	21.7	0	
7/17/08	9:30	0.0	2.0	0.0	0.0	23.0	0	
7/17/08	10:05	0.0	0.0	0.0	1.5	22.6	0	
7/17/08	10:30	0.0	0.0	0.0	1.5	23.1	0	
7/17/08	11:30	0.0	0.0	0.0	1.5	20.2	0	
7/17/08	12:30	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	14:30	0.0	0.0	0.0	0.0	20.9	0	
7/17/08	16:30	0.0	0.0	0.0	0.0	20.9	0	

Well ID: Inj 04 Rohr

Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/22/08	7:23	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:28	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:32	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:33	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:34	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:35	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:36	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:37	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:38	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:39	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:40	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:41	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:42	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:43	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:45	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:47	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:49	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:51	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:52	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:53	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:54	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:55	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:56	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:59	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:02	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:05	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:07	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:09	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	9:00	0.0	0.0	0.0	0.0	21.3	0.0	
7/22/08	9:15	0.0	0.0	0.0	0.0	22.4	0.0	
7/22/08	10:34	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:35	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:37	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:39	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:40	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:41	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:42	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:43	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:44	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:45	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:46	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:47	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:48	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:49	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:50	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:51	0.0	0.0	0.0	0.0	20.7	0.0	
7/22/08	10:54	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:55	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:56	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:58	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:59	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:01	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:02	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:05	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:06	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:07	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:09	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:10	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:33	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	12:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	12:38	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	13:14	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	14:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	14:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	15:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/22/08	15:30	0.0	0.0	0.0	0.0	20.9	0.0	

Well ID: Inj 04 Rohr

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/22/08	7:24	0.00	4.0	0.2	0.0	20.9	0.0	
7/22/08	7:25	0.00	8.0	0.4	0.0	20.9	0.0	
7/22/08	7:29	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:31	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:33	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:34	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:35	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:36	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:37	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:38	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:40	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:41	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:42	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:43	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:44	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:45	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:47	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:49	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:50	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:51	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:52	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:53	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:54	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:55	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:56	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:58	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	7:59	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:01	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:03	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:04	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:05	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:06	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:08	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:09	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:11	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	8:30	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	9:00	0.00	0.0	0.0	0.0	21.3	0.0	
7/22/08	9:30	0.00	0.0	0.0	0.0	22.7	0.0	
7/22/08	10:35	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:36	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:38	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:39	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:40	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:42	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:43	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:44	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:45	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:46	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:47	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:48	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:49	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:50	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:51	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:52	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:55	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:56	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:57	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:58	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	10:59	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:00	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:02	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:03	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:04	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:05	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:06	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:07	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:08	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:09	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:10	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:11	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	11:32	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	12:02	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	12:39	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	13:15	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	14:03	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	14:30	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	15:00	0.00	0.0	0.0	0.0	20.9	0.0	
7/22/08	15:30	0.00	0.0	0.0	0.0	20.9	0.0	

Well ID: Inj 04 Rohr - 3rd Test

Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/23/08	13:53	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:56	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:58	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:59	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:01	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:02	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:05	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:06	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:07	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:09	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:10	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:11	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:12	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:13	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:14	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:15	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:16	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:17	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:18	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:19	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:20	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:21	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:22	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:23	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:24	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:26	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:28	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:29	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	15:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	16:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	17:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	18:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	19:30	0.0	0.0	0.0	0.0	20.9	0.0	

Well ID: Inj 04 Rohr - 3rd Test

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/23/08	13:55	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:56	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:58	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	13:59	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:01	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:02	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:05	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:06	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:07	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:09	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:10	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:11	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:12	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:13	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:14	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:15	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:16	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:17	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:18	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:19	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:20	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:21	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:22	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:23	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:24	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:26	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:28	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	14:29	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	15:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	16:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	16:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	17:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	18:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/23/08	19:30	0.0	0.0	0.0	0.0	20.9	0.0	

Well ID: Inj 05 Rohr

Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/28/08	9:45	2.00	>100	30	0.0	16.2	0.0	
7/28/08	9:47	1.00	>100	89	0.0	12.2	0.0	
7/28/08	9:49	0.75	>100	57	0.0	13.2	0.0	
7/28/08	9:51	0.75	>100	63	0.0	13.2	0.0	
7/28/08	9:53	1.00	>100	73	0.0	13.5	0.0	
7/28/08	9:55	1.00	>100	77	0.0	11.6	0.0	
7/28/08	9:57	1.00	>100	63	0.0	12.6	0.0	
7/28/08	9:58	1.00	>100	47	0.0	12.4	0.0	
7/28/08	9:59	1.00	>100	64	0.0	12.9	0.0	
7/28/08	10:00	1.00	>100	42	0.0	15.6	0.0	
7/28/08	10:01	1.00	>100	63	0.0	13.3	0.0	
7/28/08	10:02	1.0	>100	48	0.0	14.6	0.0	
7/28/08	10:03	1.0	>100	48	0.0	14.8	0.0	
7/28/08	10:05	1.0	>100	75	0.0	11.5	0.0	
7/28/08	10:08	1.0	>100	62	0.0	14.4	0.0	
7/28/08	10:10	1.0	>100	63	0.0	12.7	0.0	
7/28/08	10:12	1.0	>100	74	0.0	12.4	0.0	
7/28/08	10:14	1.0	>100	61	0.0	14.9	0.0	
7/28/08	10:15	1.0	>100	64	0.0	13.0	0.0	
7/28/08	10:17	1.0	>100	65	0.0	12.8	0.0	
7/28/08	10:19	1.0	>100	42	0.0	12.7	0.0	
7/28/08	10:21	1.0	>100	86	0.0	12.0	0.0	
7/28/08	10:23	1.0	>100	73	0.0	11.9	0.0	
7/28/08	10:25	1.0	>100	61	0.0	14.8	0.0	
7/28/08	10:27	1.0	>100	66	0.0	12.2	0.0	
7/28/08	10:28	1.0	>100	61	0.0	14.3	0.0	
7/28/08	10:29	1.0	>100	74	0.0	11.6	0.0	
7/28/08	10:30	1.0	>100	72	0.0	11.9	0.0	
7/28/08	10:31	1.0	>100	69	0.0	11.7	0.0	
7/28/08	10:32	1.0	>100	69	0.0	13.0	0.0	
7/28/08	10:33	1.0	>100	68	0.0	11.8	0.0	
7/28/08	10:34	1.0	>100	87	0.0	11.1	0.0	
7/28/08	10:35	1.0	>100	75	0.0	10.7	0.0	
7/28/08	10:36	1.0	>100	79	0.0	10.7	0.0	
7/28/08	10:37	1.0	>100	73	0.0	10.8	0.0	
7/28/08	11:07	1.0	>100	12	0.0	14.1	0.0	
7/28/08	12:02	1.0	>100	11	0.0	14.8	0.0	
7/28/08	12:36	1.0	>100	11	0.0	14.3	0.0	
7/28/08	13:07	1.0	>100	10	0.0	14.2	0.0	
7/28/08	14:07	1.5	>100	10	0.0	16.4	0.0	
7/28/08	15:07	2.0	>100	11	0.0	13.2	0.0	
7/28/08	16:07	2.0	>100	16	0.0	13.4	0.0	
7/28/08	17:07	1.5	>100	17	0.0	13.8	0.0	
7/28/08	18:07	2.0	>100	95	0.0	11.7	0.0	
7/28/08	19:07	2.5	>100	95	0.0	8.3	0.0	
7/28/08	20:07	3.0	>100	97	0.0	11.1	0.0	
7/28/08	21:07	3.0	>100	97	0.0	13.0	0.0	
7/28/08	21:45	3.0	>100	100	0.0	13.2	0.0	

Well ID: Inj 05 Rohr

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/28/08	9:47	0.0	2.0	0.0	2.5	20.9	0.0	
7/28/08	9:49	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	9:50	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	9:52	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	9:54	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	9:56	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	9:58	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	9:58	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:01	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:02	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:06	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:10	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:11	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:13	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:15	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:17	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:19	0.0	1.0	0.0	0.0	20.9	0.0	
7/28/08	10:22	0.0	1.0	0.0	0.0	20.9	0.0	
7/28/08	10:24	0.0	1.0	0.0	0.0	20.9	0.0	
7/28/08	10:26	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:28	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:29	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:30	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:31	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:32	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:33	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:34	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:35	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:36	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	10:37	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	11:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	12:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	12:38	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	13:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	14:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	15:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	16:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	17:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	18:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	19:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	20:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	21:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/28/08	21:45	0.0	0.0	0.0	0.0	20.9	0.0	

Well ID: Inj 07 Walden

Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/29/08	9:15	0.00	>100	30	0.0	19.1	0.0	
7/29/08	9:16	0.00	>100	22	0.0	17.9	0.0	
7/29/08	9:17	0.00	>100	39	0.0	16.6	0.0	
7/29/08	9:18	0.00	>100	72	0.0	14.0	0.0	
7/29/08	9:19	0.00	>100	18	0.0	18.8	0.0	
7/29/08	9:20	0.00	>100	55	0.0	14.3	0.0	
7/29/08	9:21	0.00	>100	56	0.0	14.2	0.0	
7/29/08	9:22	0.00	>100	75	0.0	14.2	0.0	
7/29/08	9:23	0.00	>100	61	0.0	13.7	0.0	
7/29/08	9:24	0.00	>100	45	0.0	15.0	0.0	
7/29/08	9:25	0.00	>100	73	0.0	13.2	0.0	
7/29/08	9:26	0.00	>100	19	0.0	15.0	0.0	
7/29/08	9:27	0.00	>100	77	0.0	11.1	0.0	
7/29/08	9:28	0.00	>100	79	0.0	10.9	0.0	
7/29/08	9:29	0.00	>100	58	0.0	12.9	0.0	
7/29/08	9:31	0.00	>100	59	0.0	13.8	0.0	
7/29/08	9:34	0.00	>100	72	0.0	12.2	0.0	
7/29/08	9:36	0.00	>100	68	0.0	14.8	0.0	
7/29/08	9:38	0.00	>100	48	0.0	13.3	0.0	
7/29/08	9:40	0.00	>100	70	0.0	12.2	0.0	
7/29/08	9:42	0.00	>100	72	0.0	11.7	0.0	
7/29/08	9:44	0.00	>100	48	0.0	15.5	0.0	
7/29/08	9:45	0.00	>100	81	0.0	11.8	0.0	
7/29/08	9:46	0.00	>100	76	0.0	11.5	0.0	
7/29/08	9:47	0.00	>100	76	0.0	13.8	0.0	
7/29/08	9:48	0.00	>100	70	0.0	13.7	0.0	
7/29/08	9:49	0.00	>100	61	0.0	14.2	0.0	
7/29/08	9:50	0.00	>100	74	0.0	12.1	0.0	
7/29/08	9:52	0.00	>100	81	0.0	10.4	0.0	
7/29/08	9:54	0.00	>100	31	0.0	16.8	0.0	
7/29/08	9:56	0.00	>100	33	0.0	16.1	0.0	
7/29/08	9:57	0.00	>100	69	0.0	12.1	0.0	
7/29/08	9:58	0.00	>100	67	0.0	12.1	0.0	
7/29/08	9:59	0.00	>100	30	0.0	17.7	0.0	
7/29/08	10:00	0.00	>100	69	0.0	11.9	0.0	
7/29/08	10:46	0.00	>100	58	0.0	18.7	0.0	
7/29/08	11:21	0.00	>100	37	0.0	17.6	0.0	
7/29/08	11:51	0.00	>100	24	0.0	14.9	0.0	
7/29/08	12:51	0.00	>100	81	0.0	11.7	0.0	
7/29/08	13:53	0.00	>100	23	0.0	11.5	0.0	
7/29/08	14:52	0.00	>100	58	0.0	11.6	0.0	
7/29/08	15:15	0.00	>100	55	0.0	11.6	0.0	

Well ID: Inj 07 Walden

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/29/08	9:16	0.00	1.0	0.1	0.0	20.9	0.00	
7/29/08	9:17	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:18	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:19	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:20	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:21	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:22	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:23	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:24	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:25	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:26	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:27	0.00	1.0	0.1	0.0	20.9	0.00	
7/29/08	9:28	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:29	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:30	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:32	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:34	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:36	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:38	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:41	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:43	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:45	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:46	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:47	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:48	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:49	0.00	1.0	0.1	0.0	20.9	0.00	
7/29/08	9:50	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:51	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:53	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:55	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:57	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:58	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	9:59	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	10:00	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	10:01	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	10:47	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	11:23	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	11:53	0.00	6.0	0.3	0.0	20.9	0.00	
7/29/08	12:53	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	13:54	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	14:52	0.00	0.0	0.0	0.0	20.9	0.00	
7/29/08	15:16	0.00	0.0	0.0	0.0	20.9	0.00	

NORWEST
Applied Hydrology

Well ID: Inj 01 Pascual

Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
7/31/08	7:52	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:53	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:54	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:55	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:56	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:58	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:59	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:01	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:02	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:05	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:06	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:07	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:09	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:10	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:12	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:13	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:14	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:15	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:16	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:17	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:18	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:19	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:20	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:21	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:22	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:23	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:24	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:26	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	9:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	9:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	10:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	11:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	12:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	13:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	14:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	15:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	16:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	17:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	18:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	19:27	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	19:51	0.0	0.0	0.0	0.0	20.9	0.0	

Well ID: Inj 01 Pascual

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
7/31/08	7:51	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:52	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:53	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:54	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:55	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:56	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:57	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:58	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	7:59	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:00	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:01	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:02	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:03	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:04	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:05	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:06	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:07	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:08	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:09	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:10	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:11	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:12	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:13	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:14	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:15	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:16	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:17	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:18	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:19	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:20	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:21	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:22	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:23	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:24	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	8:55	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	9:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	9:55	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	10:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	11:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	12:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	13:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	14:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	15:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	16:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	17:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	18:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	19:25	0.0	0.0	0.0	0.0	20.9	0.0	
7/31/08	19:51	0.0	0.0	0.0	0.0	20.9	0.0	

Well ID: Inj 02 Gonzales								
Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
8/20/08	8:25	0	0	0	0	20.9	0	
8/20/08	8:26	0	0	0	0	20.9	0	
8/20/08	8:27	0	0	0	0	20.9	0	
8/20/08	8:28	0	0	0	0	20.9	0	
8/20/08	8:29	0	0	0	0	20.9	0	
8/20/08	8:30	0	0	0	0	20.9	0	
8/20/08	8:31	0	0	0	0	20.9	0	
8/20/08	8:32	0	0	0	0	20.9	0	
8/20/08	8:33	0	0	0	0	20.9	0	
8/20/08	8:34	0	0	0	0	20.9	0	
8/20/08	8:35	0	0	0	0	20.9	0	
8/20/08	8:36	0	0	0	0	20.9	0	
8/20/08	8:37	0	0	0	0	20.9	0	
8/20/08	8:38	0	0	0	0	20.9	0	
8/20/08	8:39	0	0	0	0	20.9	0	
8/20/08	8:40	0	0	0	0	20.9	0	
8/20/08	8:41	0	0	0	0	20.9	0	
8/20/08	8:42	0	0	0	0	20.9	0	
8/20/08	8:43	0	0	0	0	20.9	0	
8/20/08	8:44	0	0	0	0	20.9	0	
8/20/08	8:45	0	0	0	0	20.9	0	
8/20/08	8:46	0	0	0	0	20.9	0	
8/20/08	8:47	0	0	0	0	20.9	0	
8/20/08	8:48	0	0	0	0	20.9	0	
8/20/08	8:49	0	0	0	0	20.9	0	
8/20/08	8:50	0	0	0	0	20.9	0	
8/20/08	8:51	0	0	0	0	20.9	0	
8/20/08	8:52	0	0	0	0	20.9	0	
8/20/08	8:53	0	0	0	0	20.9	0	
8/20/08	8:54	0	0	0	0	20.9	0	
8/20/08	8:55	0	0	0	0	20.9	0	
8/20/08	8:56	0	0	0	0	20.9	0	
8/20/08	8:57	0	0	0	0	20.9	0	
8/20/08	8:58	0	0	0	0	20.9	0	
8/20/08	8:59	0	0	0	0	20.9	0	
8/20/08	9:30	0	0	0	0	20.9	0	
8/20/08	10:20	0	0	0	0	20.9	0	
8/20/08	11:20	0	0	0	0	20.9	0	
8/20/08	12:20	0	0.5	0	0	20.9	0	
8/20/08	13:20	0	0	0	0	20.9	0	
8/20/08	14:20	0	0	0	0	20.9	0	
8/20/08	17:20	0	0	0	0	20.9	0	

Well ID: Inj 02 Gonzales

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
8/20/08	8:25	0	0	0	0	20.9	0	
8/20/08	8:26	0	0	0	0	20.9	0	
8/20/08	8:27	0	0	0	0	20.9	0	
8/20/08	8:28	0	0	0	0	20.9	0	
8/20/08	8:29	0	0	0	0	20.9	0	
8/20/08	8:30	0	0	0	0	20.9	0	
8/20/08	8:31	0	0	0	0	20.9	0	
8/20/08	8:32	0	0	0	0	20.9	0	
8/20/08	8:33	0	0	0	0	20.9	0	
8/20/08	8:34	0	0	0	0	20.9	0	
8/20/08	8:35	0	0	0	0	20.9	0	
8/20/08	8:36	0	0	0	0	20.9	0	
8/20/08	8:37	0	0	0	0	20.9	0	
8/20/08	8:38	0	0	0	0	20.9	0	
8/20/08	8:39	0	0	0	0	20.9	0	
8/20/08	8:40	0	0	0	0	20.9	0	
8/20/08	8:41	0	0	0	0	20.9	0	
8/20/08	8:42	0	0	0	0	20.9	0	
8/20/08	8:43	0	0	0	0	20.9	0	
8/20/08	8:44	0	0	0	0	20.9	0	
8/20/08	8:45	0	0	0	0	20.9	0	
8/20/08	8:46	0	0	0	0	20.9	0	
8/20/08	8:47	0	0	0	0	20.9	0	
8/20/08	8:48	0	0	0	0	20.9	0	
8/20/08	8:49	0	0	0	0	20.9	0	
8/20/08	8:50	0	0	0	0	20.9	0	
8/20/08	8:51	0	0	0	0	20.9	0	
8/20/08	8:52	0	0	0	0	20.9	0	
8/20/08	8:53	0	0	0	0	20.9	0	
8/20/08	8:54	0	0	0	0	20.9	0	
8/20/08	8:55	0	0	0	0	20.9	0	
8/20/08	8:56	0	0	0	0	20.9	0	
8/20/08	8:57	0	0	0	0	20.9	0	
8/20/08	8:58	0	0	0	0	20.9	0	
8/20/08	8:59	0	0	0	0	20.9	0	
8/20/08	9:30	0	0	0	0	20.9	0	
8/20/08	10:20	0	0	0	0	20.9	0	
8/20/08	11:20	0	0	0	0	20.9	0	
8/20/08	12:20	0	0	0	0	20.9	0	
8/20/08	13:20	0	0	0	0	20.9	0	
8/20/08	14:20	0	0	0	0	20.9	0	
8/20/08	17:20	0	0	0	0	20.9	0	

Well ID: PEI Rec. 3								
Date	Time	Casing Gas Flow Rate (MCF/d)	Casing CH_4 (LEL) %	Casing CH_4 (Vol) %	Casing H_2S (ppm)	Casing O_2 (Vol) %	Casing CO (ppm)	Comments
8/25/08	8:08	4.4	>100	44	0	14.2	0	orifice 0.375
8/25/08	8:09	4.3	>100	63	0	12.1	0	
8/25/08	8:11	5.5	>100	72	0	9.0	0	
8/25/08	8:13	5.4	>100	75	0	10.0	0	
8/25/08	8:14	5.5	>100	78	0	10.6	0	
8/25/08	8:16	5.4	>100	86	0	8.4	0	
8/25/08	8:18	5.4	>100	89	0	5.1	0	
8/25/08	8:20	5.4	>100	73	0	12.1	0	
8/25/08	8:22	5.4	>100	73	0	12.1	0	
8/25/08	8:24	5.5	>100	69	0	9.0	0	
8/25/08	8:26	7.5	>100	77	0	7.1	0	
8/25/08	8:28	7.1	>100	66	0	10.7	0	
8/25/08	8:30	7.0	>100	73	0	8.9	0	
8/25/08	8:32	7.3	>100	69	0	8.8	0	
8/25/08	8:34	7.3	>100	71	0	8.0	0	
8/25/08	8:36	7.3	>100	72	0	8.1	0	
8/25/08	8:37	7.3	>100	74	0	11.8	0	
8/25/08	8:39	7.4	>100	84	0	7.5	0	
8/25/08	8:40	7.2	>100	62	0	7.0	0	
8/25/08	8:42	7.2	>100	68	0	7.5	0	
8/25/08	8:43	7.1	>100	68	0	11.0	0	
8/25/08	8:44	7.0	>100	70	0	11.2	0	
8/25/08	8:46	6.3	>100	48	0	16.0	0	
8/25/08	8:48	6.3	>100	85	0	9.3	0	
8/25/08	8:49	6.0	>100	85	0	7.0	0	
8/25/08	8:51	5.9	>100	74	0	10.2	0	
8/25/08	8:52	5.9	>100	81	0	7.5	0	
8/25/08	8:53	5.9	>100	68	0	13.2	0	
8/25/08	8:54	5.9	>100	69	0	9.3	0	
8/25/08	8:55	5.9	>100	77	0	8.5	0	
8/25/08	8:56	5.9	>100	85	0	14.3	0	
8/25/08	8:57	5.9	>100	77	0	11.2	0	
8/25/08	8:58	5.9	>100	78	0	11.2	0	
8/25/08	8:59	5.8	>100	91	0	11.2	0	
8/25/08	9:00	5.8	>100	79	0	8.2	0	
8/25/08	9:45	5.0	70	4	0	9.7	0	
8/25/08	10:15	5.0	>100	46	0	12.4	0	
8/25/08	10:45	4.9	>100	49	0	11.6	0	
8/25/08	11:05	4.9	>100	49	0	13.0	0	
8/25/08	11:35	4.9	>100	48	0	12.4	0	
8/25/08	12:05	4.8	>100	50	0	11.7	0	
8/25/08	12:35	4.7	>100	43	0	13.4	0	
8/25/08	13:05	4.8	>100	43	0	18.2	0	
8/25/08	13:35	4.7	>100	41	0	14.8	0	
8/25/08	14:05	4.7	>100	55	0	11.8	0	
8/25/08	14:35	4.6	>100	24	0	15.1	0	
8/25/08	15:05	4.7	>100	62	0	9.9	0	
8/25/08	15:35	4.7	65	3	0	13.0	0	
8/25/08	16:05	4.5	>100	50	0	11.2	0	
8/25/08	16:35	4.6	>100	65	0	7.8	0	
8/25/08	17:05	4.5	>100	36	0	13.3	0	
8/25/08	18:05	4.5	>100	20	0	15.5	0	
8/25/08	19:05	4.5	>100	12	0	17.1	0	
8/25/08	20:05	4.5	>100	13	0	16.7	0	

Well ID: PEI Rec. 3

Date	Time	Separator Gas Flow Rate (MCF/d)	Separator CH_4 (LEL) %	Separator CH_4 (Vol) %	Separator H_2S (ppm)	Separator O_2 (Vol) %	Separator CO (ppm)	Comments
8/25/08	8:07	0.0	0	0	0	20.9	0	
8/25/08	8:08	0.0	13	0.7	0	20.8	0	
8/25/08	8:09	0.0	10	0.5	0	20.9	0	
8/25/08	8:10	0.0	3	0.2	0	20.9	0	
8/25/08	8:11	0.0	10	0.5	0	20.9	0	
8/25/08	8:12	0.0	12	0.6	0	20.9	0	
8/25/08	8:13	0.0	10	0.5	0	20.9	0	
8/25/08	8:14	0.0	10	0.5	0	20.9	0	
8/25/08	8:15	0.0	10	0.5	0	20.9	0	
8/25/08	8:16	0.0	10	0.5	0	20.9	0	
8/25/08	8:17	0.0	1	0.1	0	20.9	0	
8/25/08	8:18	0.0	3	0.2	0	20.9	0	
8/25/08	8:19	0.0	5	0.3	0	20.9	0	
8/25/08	8:20	0.0	7	0.4	0	20.9	0	
8/25/08	8:21	0.0	7	0.4	0	20.9	0	
8/25/08	8:22	0.0	10	0.5	0	20.9	0	
8/25/08	8:23	0.0	7	0.4	0	20.9	0	
8/25/08	8:24	0.0	7	0.4	0	20.9	0	
8/25/08	8:25	0.0	7	0.4	0	20.9	0	
8/25/08	8:26	0.0	7	0.4	0	20.9	0	
8/25/08	8:27	0.0	7	0.4	0	20.9	0	
8/25/08	8:28	0.0	7	0.4	0	20.9	0	
8/25/08	8:29	0.0	7	0.4	0	20.9	0	
8/25/08	8:30	0.0	7	0.4	0	20.9	0	
8/25/08	8:31	0.0	8	0.4	0	20.9	0	
8/25/08	8:32	0.0	8	0.4	0	20.9	0	
8/25/08	8:33	0.0	8	0.4	0	20.9	0	
8/25/08	8:34	0.0	10	0.5	0	20.9	0	
8/25/08	8:35	0.0	10	0.5	0	20.9	0	
8/25/08	8:36	0.0	8	0.4	0	20.9	0	
8/25/08	8:37	0.0	11	0.6	0	20.9	0	
8/25/08	8:38	0.0	11	0.6	0	20.9	0	
8/25/08	8:39	0.0	10	0.5	0	20.9	0	
8/25/08	8:40	0.0	12	0.6	0	20.9	0	
8/25/08	8:41	0.0	13	0.7	0	20.9	0	
8/25/08	9:45	0.0	0	0.0	0	20.9	0	
8/25/08	10:15	0.0	0	0.0	0	20.9	0	
8/25/08	10:45	0.0	0	0.0	0	20.9	0	
8/25/08	11:05	0.0	0	0.0	0	20.9	0	
8/25/08	11:35	0.0	0	0.0	0	20.9	0	
8/25/08	12:05	0.0	0	0.0	0	20.9	0	
8/25/08	12:35	0.0	0	0.0	0	20.9	0	
8/25/08	13:05	0.0	0	0.0	0	20.9	0	
8/25/08	13:35	0.0	19	1.0	0	20.9	0	
8/25/08	14:05	0.0	6	0.3	0	20.9	0	
8/25/08	14:35	0.0	0	0.0	0	20.9	0	
8/25/08	15:05	0.0	0	0.0	0	20.9	0	
8/25/08	15:35	0.0	13	0.7	0	20.9	0	
8/25/08	16:05	0.0	0	0.0	0	20.9	0	
8/25/08	16:35	0.0	0	0.0	0	20.9	0	
8/25/08	17:05	0.0	0	0.0	0	20.9	0	

APPENDIX D

Water Quality Laboratory Data

001

WORK ORDER Summary Evergreen Analytical, Inc. 08-5524

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

8/1/2008 10:50:12 AM

Client Project ID: Petroglyph CBM Wells

QC Level: LEVEL I+

Comments: PDF + EDD in Pinery

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-5524-01A	INJ01PT	Water	7/31/08 1410	8/01/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	8/15/08	8/02/08
08-5524-01B	INJ01PT	Water	7/31/08 1410	8/01/08	F_W	Fluoride	☐	☐	8/15/08	8/28/08
08-5524-01C	INJ01PT	Water	7/31/08 1410	8/01/08	200.8_TR *	200.8: Total Metals	☐	☐	8/15/08	1/27/09
08-5524-01C	INJ01PT	Water	7/31/08 1410	8/01/08	245.1_WT *	245.1: Mercury, Total Water	☐	☐	8/15/08	8/28/08
08-5524-01D	INJ01PT	Water	7/31/08 1410	8/01/08	ALK_WGRP *	Alkalinity	☐	☐	8/15/08	8/14/08
08-5524-01E	INJ01PT	Water	7/31/08 1410	8/01/08	504 *	504: Standard List	☐	☐	8/15/08	8/14/08
08-5524-01F	INJ01PT	Water	7/31/08 1410	8/01/08	524 *	524.2: Standard List	☐	☐	8/15/08	8/14/08
08-5524-01F	INJ01PT	Water	7/31/08 1410	8/01/08	VOATICS	VOA TICS (Largest 10)	☐	☐	8/15/08	8/14/08
08-5524-01G	INJ01PT	Water	7/31/08 1410	8/01/08	MEEP_W *	RSK175M: MEE	☐	☐	8/15/08	8/14/08
08-5524-01H	INJ01PT	Water	7/31/08 1410	8/01/08	SULF_W	Total Sulfide	☐	☐	8/15/08	8/07/08
08-5524-01I	INJ01PT	Water	7/31/08 1410	8/01/08	PH_W	Discharge Water pH	☐	☐	8/15/08	7/31/08
08-5524-01I	INJ01PT	Water	7/31/08 1410	8/01/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	8/15/08	8/07/08
08-5524-01I	INJ01PT	Water	7/31/08 1410	8/01/08	TSS	Total Suspended Solids (TSS)	☐	☐	8/15/08	8/07/08
08-5524-01J	INJ01PT	Water	7/31/08 1410	8/01/08	RAD226/228	Radium 226/228	☐	☐	8/15/08	1/27/09
08-5524-01K	INJ01PT	Water	7/31/08 1410	8/01/08	ALBETA	Gross Alpha-Beta	☐	☐	8/15/08	1/27/09
08-5524-01K	INJ01PT	Water	7/31/08 1410	8/01/08	TS_SUB	Total Solids for Gross A B	☐	☐	8/15/08	8/07/08
08-5524-01L	INJ01PT	Water	7/31/08 1410	8/01/08	CN_TW	Total Cyanide	☐	☐	8/15/08	8/14/08

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Evergreen Analytical Laboratory Inc.

Page 1 of 1

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719 742 5570 Fax # 719 742 5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☒ PDF ☒ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719 742 5570 Fax # 719 742 5571
Project ID# Petroglyph CBM Wells
P.O. ____ Quote 10165
Sampler TMelland

NOTE: *Identify Known Hazards Below*

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.

For Laboratory Use Only
W.O. # 08-5524
B.O.F. # 2r749
C/S (O) 1487, 1492
C/S (I) ____, 1491
Temp. °C 1.9 / Ice ✓
Seals Present Y / N / NA
Samples Pres. Y / N / NA
Headspace Y / N / NA
By ____

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	320.0 Anions by IC	Fluoride 200.8 Hg reg/dissolved	Alkalinity Total Solids (i.e. Gross Alpha)	504.1 EDB/DBCP	524.2 VOA TICS	RSKSOP-175 M	Total Sulfide	TSS TDS pH	Radium 226/228	Gross Alpha - Beta	Total Cyanide	For Laboratory Use Only
Inj 01 PT	7/31/08	14:10					1	1	1	1	2	3	3	1	1	4	1	1
			1 cooler, 20 bottles															

← # Bottles

Unpreserved
Preserve at Lab

01
pH<2

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

A	B	C	D	E	F	G	H	I	J	K	L

Sample Fraction

Instructions:

** **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
Thomas Melland	7-31-08 17:00						8/1/08 10:00

Evergreen Analytical, Inc.

Date: *02-Sep-08*

Lab Order: 08-5524
Client Project ID Petroglyph CBM Wells

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 1.9 °C.
Sample(s) were received in good condition, in the proper container.
Sample(s) were preserved properly, except the metals sample which was preserved at the lab.
VOC sample(s) were marked as preserved on the bottle labels.
VOC sample(s) were received with no headspace present. JD

QUALITY ASSURANCE (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained.
The QA pages (method blanks and spike reports) were retained in the project file and are available upon request. CMS

CLIENT SERVICES

There are no anomalies to report. PM

GENERAL CHEMISTRY

The flagged Fluoride result only applies to drinking waters that exceed the MCL.
There are no other anomalies to report. MM

METALS ANALYSIS

Sample(s) were preserved by the metals group prior to analysis. The recovery for iron and manganese was below QC limits on the LCS but within limits on the batch matrix spikes. Both metals were detected in the sample and the concentrations may be slightly under-estimated. There are no other anomalies to report. MB/CMS

GAS CHROMATOGRAPHY

Method 504.1: There are no anomalies to report. AE
Method RSK175M: Laboratory control spikes (LCS/LCSD) and matrix spike duplicate (MSD) recoveries for Ethene are above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS/CMS

Evergreen Analytical, Inc.

Date: *02-Sep-08*

Lab Order: 08-5524

Client Project ID Petroglyph CBM Wells

CASE NARRATIVE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: The laboratory control spike duplicate (LCSD) recovery for Dichlorodifluoromethane is above QC limits but the laboratory control spike (LCS) recovery is within the QC limits. Since the bias is high and the sample is non-detect, no further action is required. There are no other anomalies to report. DC

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

AUG 29 2008

CHAIN-OF-CUSTODY RECORD

PO Number: 8005

WorkOrder: 08-5524

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

01-Aug-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests						
				ALPHABETA	RAD226/228	TS				
08-5524-01J	Water	7/31/2008 2:10:00 PM	1LPHNO3		1					
08-5524-01K	Water	7/31/2008 2:10:00 PM	1LPHNO3	1		1				

Comments:

Relinquished by:	**Date/Time** 8/18/06 2:05pm	**Received by:** Diane Tipton	**Date/Time** 8-8-08 1405
Relinquished by:		**Received by:**	

AUG 29 2008

006

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 27, 2008
HRI PROJECT	009-93
HRI SERIES NO	H163/08
DATE REC'D.	8/8/2008
CUST. P.O.#	8005

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. H163/08-1

SAMPLE IDENTIFICATION: 08-5524-01J, K - sampled on 07/31/2008 @ 1410

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	2.8(+-2.8)	1.9	SM 7110 B	8/22/2008 @ 0833	AN
Gross Beta (+-Precision*), pCi/l (T)	0.0(+-1.9)	2.0	SM 7110 B	8/22/2008 @ 0833	AN
Radium-226 (+-Precision*), pCi/l (T)	0.0(+-0.2)	0.1	SM 7500-Ra B	8/14/2008 @ 0830	EDF
Radium-228 (+-Precision*), pCi/l (T)	0.6(+-0.7)	0.6	EPA Ra-05	8/19/2008 @ 1336	AN
Total Solids, mg/l	443	10	EPA 160.3	8/11/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808;
NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: INJ01PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/31/08 1410
Date Received: 8/1/08

Lab Work Order 08-5524
Lab Sample ID: 08-5524-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 8/1/08
Date Analyzed: 8/1/08 1218
Method Blank: MB 8/01/08
Dilution Factor: 1
Lab Fraction ID: 08-5524-01A

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	10.1	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	U	0.20	mg/L
Nitrate-N		U	0.045	mg/L

Date Prepared: 8/1/08
Date Analyzed: 8/1/08 1408
Method Blank: MB 8/01/08
Dilution Factor: 10
Lab Fraction ID: 08-5524-01A

Analytes	CAS Number	Result	LQL	Units
Sulfate	7778-80-2	201	5.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/4/08

Evergreen Analytical, Inc.

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

Client Sample ID: INJ01PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/31/08 1410
Date Received: 8/1/08

Lab Work Order: 08-5524
Lab Sample ID: 08-5524-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 8/8/08 **Lab File ID:** 3 **Dilution Factor:** 1
Date Analyzed: 8/8/08 **Method Blank:** MBLK 080808 **Lab Fraction ID:** 08-5524-01D

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		63.0	5.0	mg/L CaCO3
Bicarbonate		59.3	5.0	mg/L CaCO3
Carbonate		U	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 8/6/08 **Lab File ID:** 57 **Dilution Factor:** 1
Date Analyzed: 8/6/08 **Method Blank:** MBLK 08/06/08 **Lab Fraction ID:** 08-5524-01L

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 8/5/08 **Lab File ID:** 11 **Dilution Factor:** 1
Date Analyzed: 8/5/08 **Method Blank:** MBLK 080508 **Lab Fraction ID:** 08-5524-01B

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	8.0 *	0.20	mg/L

E150.1 PH

Method: E150.1 **Prep Method:**

Date Prepared: 8/1/08 **Dilution Factor:** 1
Date Analyzed: 8/1/08 1100 **Lab Fraction ID:** 08-5524-01I

Analytes	CAS Number	Result	LQL	Units
pH		9.13	1.0	pH Units

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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/12/08

Evergreen Analytical, Inc.

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

Client Sample ID: INJ01PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/31/08 1410
Date Received: 8/1/08

Lab Work Order 08-5524
Lab Sample ID: 08-5524-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 8/1/08 **Lab File ID:** 65 **Dilution Factor:** 1
Date Analyzed: 8/1/08 **Method Blank:** MBLK 080108 **Lab Fraction ID:** 08-5524-01H

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 8/5/08 **Lab File ID:** 15 **Dilution Factor:** 1
Date Analyzed: 8/5/08 **Method Blank:** MBLK 08/05/08 **Lab Fraction ID:** 08-5524-01I

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		426	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 8/6/08 **Lab File ID:** 12 **Dilution Factor:** 1
Date Analyzed: 8/6/08 **Method Blank:** MBLK 080608 **Lab Fraction ID:** 08-5524-01I

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		31.9	5.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/11/2008

Evergreen Analytical, Inc.

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

Client Sample ID: INJ01PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/31/08
Date Received: 8/1/08

Lab Work Order 08-5524
Lab Sample ID: 08-5524-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 8/4/08
Date Analyzed: 8/7/08
Lab File ID: 080807B.B\076SMPL.D
Method Blank: MB-16259
Dilution Factor: 1
Lab Fraction ID: 08-5524-01C

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.0249	0.0100	mg/L
Beryllium	7440-41-7	U	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	6.55	0.400	mg/L
Chromium	7440-47-3	0.00312	0.00220	mg/L
Copper	7440-50-8	U	0.0100	mg/L
Iron	7439-89-6	2.51	0.200	mg/L
Lead	7439-92-1	0.00136	0.00100	mg/L
Magnesium	7439-95-4	0.212	0.0500	mg/L
Manganese	7439-96-5	0.0556	0.00500	mg/L
Molybdenum	7439-98-7	0.00820	0.00500	mg/L
Nickel	7440-02-0	U	0.0100	mg/L
Potassium	7440-09-7	0.528	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	140	0.500	mg/L
Strontium	7440-24-6	0.132	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.0196	0.00500	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/11/08

Evergreen Analytical, Inc.

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

Client Sample ID: INJ01PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/31/08
Date Received: 8/1/08

Lab Work Order 08-5524
Lab Sample ID: 08-5524-01
Sample Matrix: Water

MERCURY, TOTAL

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 8/5/08
Date Analyzed: 8/5/08
Lab File ID: 80508
Method Blank: MB-16262
Dilution Factor: 1
Lab Fraction ID: 08-5524-01C

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.000100	mg/L

MB
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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/11/08

Evergreen Analytical, Inc.

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

Client Sample ID:	INJ01PT	**Lab Work Order:**	08-5524
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5524-01E
Date Collected:	7/31/2008	**Sample Matrix:**	Water
Date Received:	8/1/2008	**Lab File ID:**	018.D
Date Prepared:	8/12/2008	**Method Blank:**	MB-16334
Date Analyzed:	8/12/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/13/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	INJ01PT	**Lab Work Order:**	08-5524
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5524-01F
Date Collected:	7/31/2008	**Sample Matrix:**	Water
Date Received:	8/1/2008	**Lab File ID:**	\VOA40807\0801008.D
Date Prepared:	8/7/2008	**Method Blank:**	MB4080708a
Date Analyzed:	8/7/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

VOLATILE COMPOUNDS

Method: E524.2
Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/11/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	INJ01PT	**Lab Work Order:**	08-5524
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5524-01F
Date Collected:	7/31/2008	**Sample Matrix:**	Water
Date Received:	8/1/2008	**Lab File ID:**	\VOA40807\0801008.D
Date Prepared:	8/7/2008	**Method Blank:**	MB4080708a
Date Analyzed:	8/7/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	U		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	101	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	98	**QC Limits:**	70-130 %REC

Analyst | **Approved**

Qualifiers: **See case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

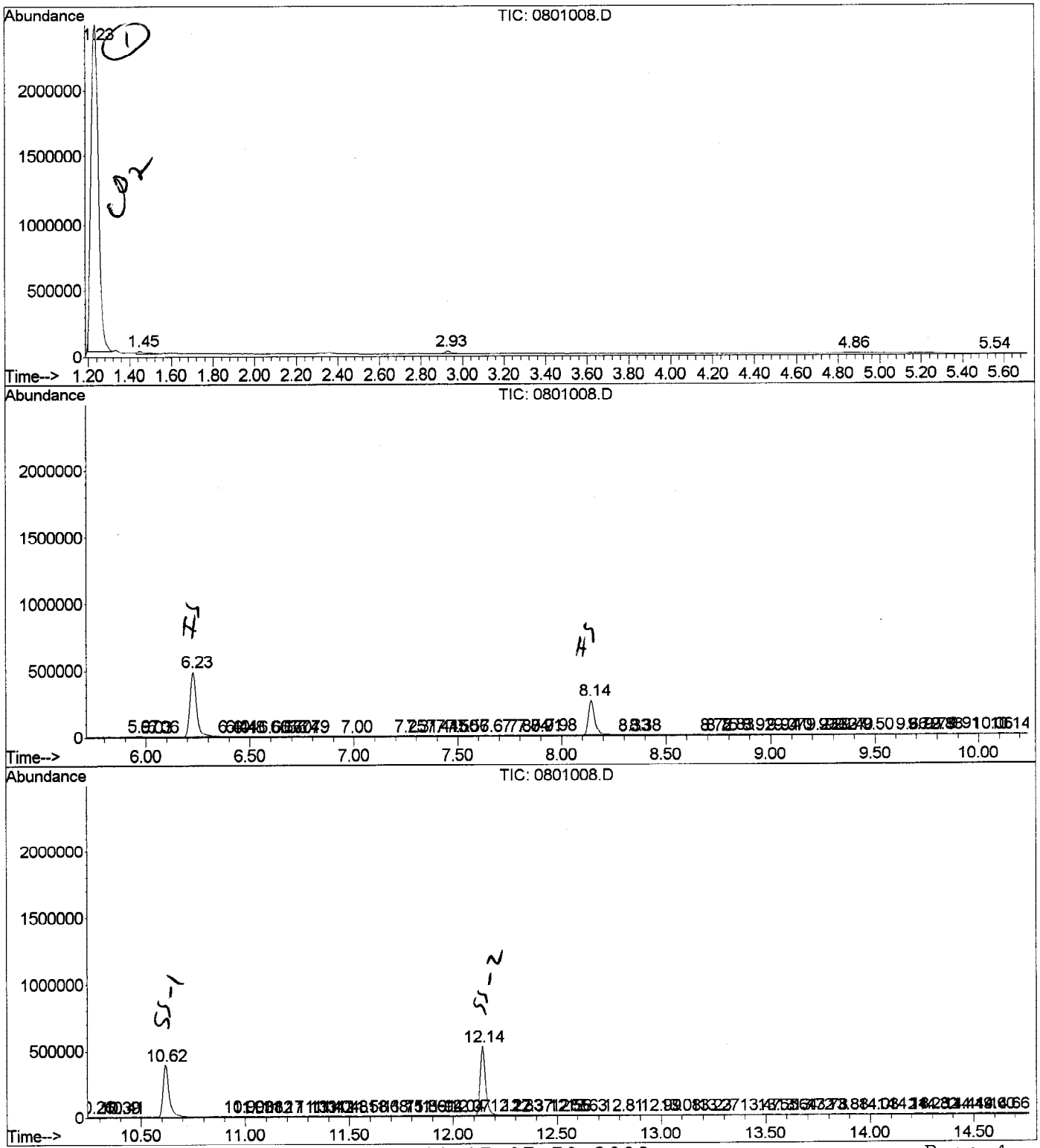
Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/11/2008

LSC Report - Integrated Chromatogram

File : C:\MSDCHEM\1\DATA\VOA40807\0801008.D
Operator : Don Chamot
Acquired : 7 Aug 2008 12:51 pm using AcqMethod 5242BASE
Instrument : Instrumen
Sample Name: 08-5524-01F
Misc Info : SAMP 524
Vial Number: 8
Quant File :5240716.RES (RTE Integrator)



Tentatively Identified Compound (LSC) summary

perator ID: Don Chamot Date Acquired: 7 Aug 2008 12:51 pm
ata File: C:\MSDCHEM\1\DATA\VOA40807\0801008.D
ame: 08-5524-01F
isc: SAMP 524
ethod: C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
itle: VOA4 524.2 Revision 4.1
ibrary Searched: C:\DATABASE\NIST98.L

					--Internal Standard---			
TIC Top Hit name	RT	EstConc	Units	Response	#	RT	Resp	Conc
arbon dioxide	1.23	28.6	ug/l	6093470	1	6.23	1064240	5.0

Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\0801008.D Vial: 8
Acq On : 7 Aug 2008 12:51 pm Operator: Don Chamot
Sample : 08-5524-01F Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

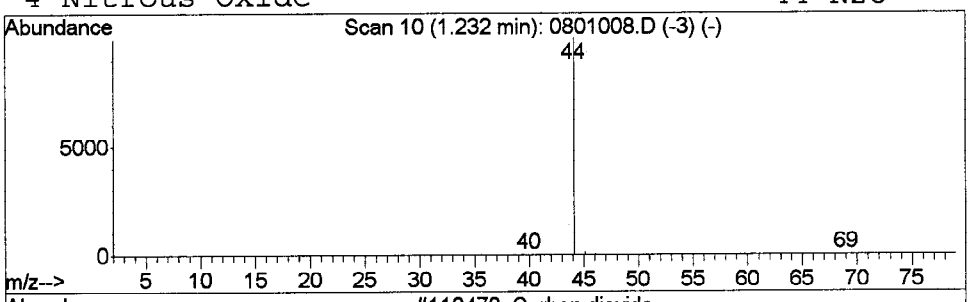
Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

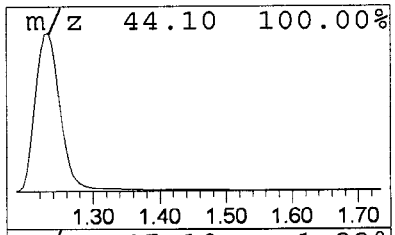
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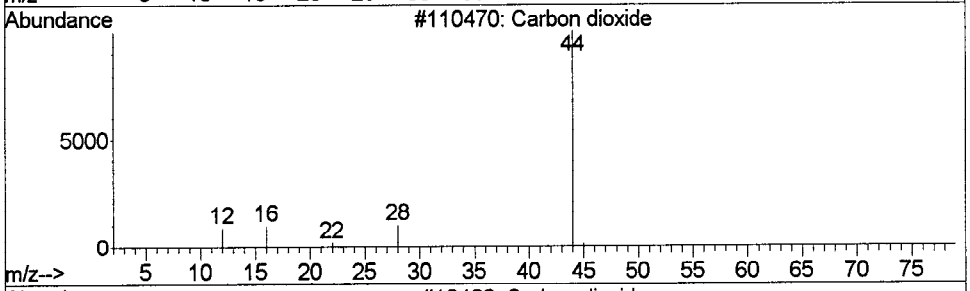
Peak Number 1 Carbon dioxide Concentration Rank 1

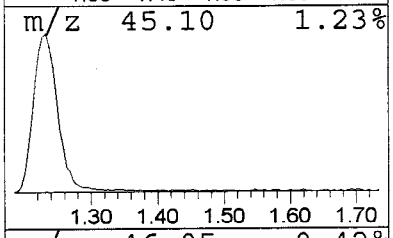
	R.T.	EstConc	Area	Relative to ISTD	R.T.
1	1.23	28.63 ug/l	6093470	Fluorobenzene (IS-1)	6.23

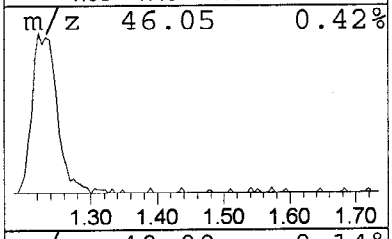
Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Carbon dioxide	44	CO2	000124-38-9	4
2	Carbon dioxide	44	CO2	000124-38-9	4
3	Nitrous Oxide	44	N2O	010024-97-2	3
4	Nitrous Oxide	44	N2O	010024-97-2	3

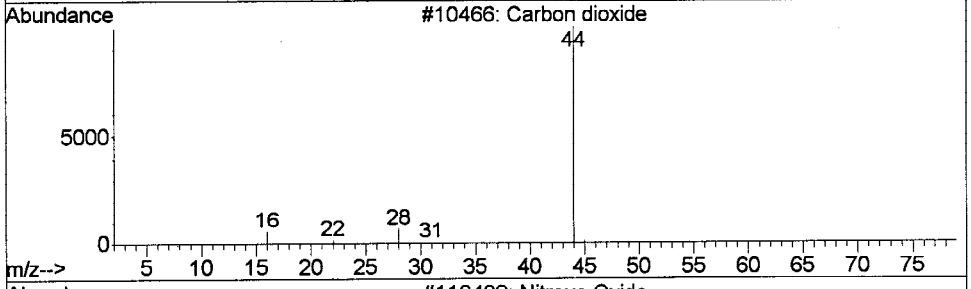


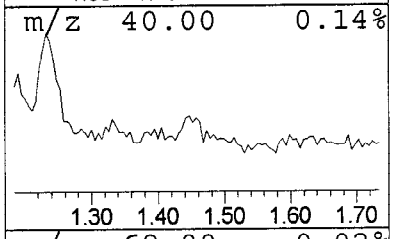


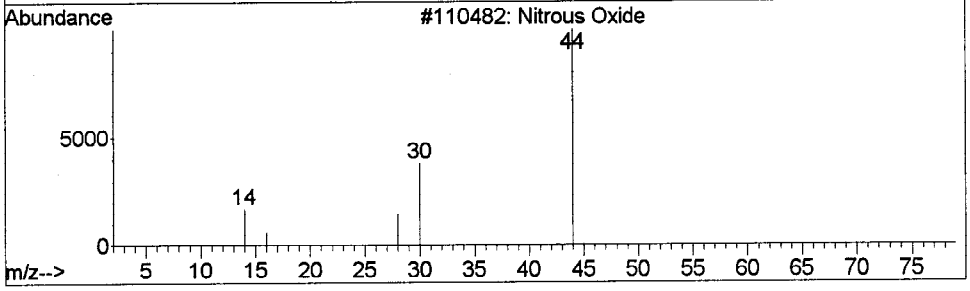


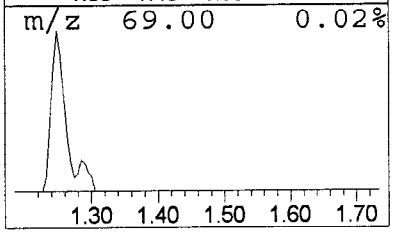












Evergreen Analytical, Inc.

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

Client Sample ID:	INJ01PT	**Lab Work Order**	08-5524
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5524-01G
Date Collected:	7/31/08	**Sample Matrix:**	Water
Date Received:	8/1/08	**Lab File ID:**	GAS080612
Date Prepared:	8/6/08	**Method Blank:**	GB080608
Date Analyzed:	8/6/08	**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
Ethane	74-84-0	U	0.0016
Ethene	74-85-1	U	0.0024
Methane	74-82-8	0.60	0.00080

MDS
Analyst

Approved

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/6/08

Evergreen Analytical Laboratory

September 02, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-5524
Client Project ID: Petroglyph CBM Wells

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

WORK ORDER Summary Evergreen Analytical, Inc. 08-6208

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

8/21/2008 12:25:12 PM

Client Project ID: Petroglyph Wells

QC Level: LEVEL I+

Comments: PDF + EDD in Pinery Email PDF to both Tom Melland and Konrad Quast per client request. 7/30/08 KSH

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-6208-01A	INJ02PT	Water	8/20/08 1551	8/21/08	RAD226/228	Radium 226/228	☐	☐	9/05/08	2/16/09
08-6208-01B	INJ02PT	Water	8/20/08 1551	8/21/08	ALBETA	Gross Alpha-Beta	☐	☐	9/05/08	2/16/09
08-6208-01B	INJ02PT	Water	8/20/08 1551	8/21/08	TS_SUB	Total Solids for Gross A B	☐	☐	9/05/08	8/27/08
08-6208-01C	INJ02PT	Water	8/20/08 1551	8/21/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	9/05/08	8/22/08
08-6208-01D	INJ02PT	Water	8/20/08 1551	8/21/08	F_W	Fluoride	☐	☐	9/05/08	9/17/08
08-6208-01E	INJ02PT	Water	8/20/08 1551	8/21/08	200.8_TR *	200.8: Total Metals	☐	☐	9/05/08	2/16/09
08-6208-01E	INJ02PT	Water	8/20/08 1551	8/21/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	9/05/08	9/17/08
08-6208-01F	INJ02PT	Water	8/20/08 1551	8/21/08	504 *	504: Standard List	☐	☐	9/05/08	9/03/08
08-6208-01G	INJ02PT	Water	8/20/08 1551	8/21/08	MEEP_W *	RSK175M: MEE	☐	☐	9/05/08	9/03/08
08-6208-01H	INJ02PT	Water	8/20/08 1551	8/21/08	524 *	524.2: Standard List	☐	☐	9/05/08	9/03/08
08-6208-01H	INJ02PT	Water	8/20/08 1551	8/21/08	VOATICS	VOA TICS (Largest 10)	☐	☐	9/05/08	9/03/08
08-6208-01I	INJ02PT	Water	8/20/08 1551	8/21/08	CN_TW	Total Cyanide	☐	☐	9/05/08	9/03/08
08-6208-01J	INJ02PT	Water	8/20/08 1551	8/21/08	SULF_W	Total Sulfide	☐	☐	9/05/08	8/27/08
08-6208-01K	INJ02PT	Water	8/20/08 1551	8/21/08	ALK_WGRP *	Alkalinity	☐	☐	9/05/08	9/03/08
08-6208-01K	INJ02PT	Water	8/20/08 1551	8/21/08	PH_DW ^	E150.1 pH	☐	☐	9/05/08	8/21/08
08-6208-01K	INJ02PT	Water	8/20/08 1551	8/21/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	9/05/08	8/27/08
08-6208-01K	INJ02PT	Water	8/20/08 1551	8/21/08	TSS	Total Suspended Solids (TSS)	☐	☐	9/05/08	8/27/08

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Evergreen Analytical Laboratory Inc.

Page 1 of 1

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City LaVeta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☒ PDF ☑ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City LaVeta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571
Project ID# Petroglyph Wells
P.O. _____ Quote 10165
Sampler _____

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.

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	Radium 226/228	Gross Alpha - Beta	300.0 Dw Anions by IC	Fluoride	200.8 Drinking Water ICP-MS Metals	Total Solids for Gross AB	EDB / DBCP	RSKSOP-175M	VOA TICS	Total Cyanide	Total Sulfide	TDS, TSS, pH	← # of bottles	For Laboratory Use Only
Inj 08 PT	8-20-08	15:55					4	1	1	1	-	1	2	3	3	1	1	1		W.O. # 08-6208
																				B.O.F. # 25747
																				C/S (O) 967 NO-
																				C/S (I) 869 / UST
																				Temp. °C 1.7 / Ice ✓
																				Seals Present ✓ / N / NA
																				Samples Pres. ✓ / N / NA
																				Headspace Y / N / NA
																				By JL

20 bottles
1 cooler

Unpreserved lab to preserve

pH 2 or >12

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

A	B	C	D	E	B	F	G	H	I	J	K	Sample Fraction

Instructions:

** **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
Michael Bauer	8/20/08 1800					JL	8/21/08 1000

Evergreen Analytical, Inc. **Date:** *08-Sep-08*

Client Project ID: Petroglyph Wells
Lab Order: 08-6208

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 1.7 °C.
Sample(s) were received in good condition, in the proper container, and within holding times.
Total Cyanide sample was preserved properly.
VOC sample(s) were marked as preserved on the bottle labels.
VOC sample(s) were received with no headspace present. JD

QUALITY ASSURANCE (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained. Analyses of drinking water samples meet the requirements of the EPA Manual for the Certification of Laboratories Analyzing Drinking Water, unless otherwise explained. TP/KSH

CLIENT SERVICES

The sample was logged in for alkalinity analysis per the quotation. Additional reporting information was selected per the quotation. The metal and anion analytes were selected per the quotation. There are no other anomalies to report. EKH

GENERAL CHEMISTRY

F_W: * = The flagged Fluoride result only applies to drinking waters that exceed the MCL. JKD

There are no other anomalies to report. MM/BNP

METALS ANALYSIS

Zinc was detected in the method blank (MB) for the 200.8 total metals at 0.014 mg/L. This amount was not subtracted from the sample result. There are no anomalies to report. WKH

GAS CHROMATOGRAPHY

Method RSK175M: The matrix spike duplicate (MSD) recovery for Methane is below the QC limits due to the high concentration of Methane in the sample versus the low concentration of the spike. The RPD is within limits and the laboratory control spike and laboratory control spike duplicate (LCS/LCSD) recoveries are within QC limits, showing the analysis is in control. There are no other

anomalies to report. MDS/TP/KSH

Method 504.1: There are no anomalies to report. AE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: The sample required a 5x dilution for analysis due to the foamy matrix. This caused the vinyl chloride reporting limit to exceed the MCL. Dichlorodifluoromethane recovery is 3% above QC limits on the laboratory control spike. The sample is non-detect so no further action is required. The Bromomethane RPD for the laboratory control spike and laboratory control spike duplicate (LCS/LCSD) recoveries is above the QC limits, but the spiked recoveries are within QC limits. There are no other anomalies to report. TMB/KSH

Evergreen Analytical, Inc.

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

Client Sample ID: INJ02PT
Client Project ID: Petroglyph Wells
Date Collected: 8/20/08 1551
Date Received: 8/21/08

Lab Work Order: 08-6208
Lab Sample ID: 08-6208-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 8/21/08
Date Analyzed: 8/21/08 1219
Lab File ID: 10
Method Blank: MB 082108
Dilution Factor: 1
Lab Fraction ID: 08-6208-01C

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	6.9	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	U	0.20	mg/L
Nitrate-N		U	0.045	mg/L
Sulfate	7778-80-2	7.9	0.50	mg/L

Analyst

Approved

Qualifiers:
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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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/22/2008

Evergreen Analytical, Inc.

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

Client Sample ID: INJ02PT
Client Project ID: Petroglyph Wells
Date Collected: 8/20/08 1551
Date Received: 8/21/08

Lab Work Order 08-6208
Lab Sample ID: 08-6208-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 8/27/08
Date Analyzed: 8/27/08
Lab File ID: 20
Method Blank: MBLK 08/27/08
Dilution Factor: 1
Lab Fraction ID: 08-6208-01K

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		226	5.0	mg/L CaCO3
Bicarbonate		200	5.0	mg/L CaCO3
Carbonate		26.1	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 8/29/08
Date Analyzed: 8/29/08
Lab File ID: 50
Method Blank: MBLK 8/29/08
Dilution Factor: 1
Lab Fraction ID: 08-6208-01I

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		0.013	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 8/22/08
Date Analyzed: 8/22/08
Lab File ID: 13
Method Blank: MBLK 082208
Dilution Factor: 1
Lab Fraction ID: 08-6208-01D

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	6.7 *	0.20	mg/L

E150.1 PH

Method: E150.1 **Prep Method:**

Date Prepared: 8/21/08
Date Analyzed: 8/21/08 1100
Dilution Factor: 1
Lab Fraction ID: 08-6208-01K

Analytes	CAS Number	Result	LQL	Units
pH		8.99	1.00	pH Units

Analyst

Approved

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Surr - Surrogate

Print Date: 9/2/2008

Evergreen Analytical, Inc.

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

Client Sample ID: INJ02PT
Client Project ID: Petroglyph Wells
Date Collected: 8/20/08 1551
Date Received: 8/21/08

Lab Work Order 08-6208
Lab Sample ID: 08-6208-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 8/25/08
Date Analyzed: 8/25/08
Lab File ID: 64
Method Blank: MBLK 082508
Dilution Factor: 1
Lab Fraction ID: 08-6208-01J

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 8/26/08
Date Analyzed: 8/26/08
Lab File ID: 1
Method Blank: MBLK 082608
Dilution Factor: 1
Lab Fraction ID: 08-6208-01K

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		785	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 8/25/08
Date Analyzed: 8/25/08
Lab File ID: 20
Method Blank: MBLK 08/25/08
Dilution Factor: 1
Lab Fraction ID: 08-6208-01K

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		244	5.0	mg/L

Analyst

Approved

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Print Date: 9/2/2008

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
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Client Sample ID: INJ02PT
Client Project ID: Petroglyph Wells
Date Collected: 8/20/08
Date Received: 8/21/08

Lab Work Order 08-6208
Lab Sample ID: 08-6208-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 8/21/08
Date Analyzed: 8/25/08
Lab File ID: 080825A.B\027SMPL.D
Method Blank: MB-16443
Dilution Factor: 1
Lab Fraction ID: 08-6208-01E

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.382	0.0100	mg/L
Beryllium	7440-41-7	0.00168	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	10.4	0.400	mg/L
Chromium	7440-47-3	0.0365	0.00220	mg/L
Copper	7440-50-8	0.0453	0.0100	mg/L
Iron	7439-89-6	35.7	0.200	mg/L
Lead	7439-92-1	0.0122	0.00100	mg/L
Magnesium	7439-95-4	7.85	0.0500	mg/L
Manganese	7439-96-5	0.527	0.00500	mg/L
Molybdenum	7439-98-7	0.00522	0.00500	mg/L
Nickel	7440-02-0	0.0237	0.0100	mg/L
Potassium	7440-09-7	4.59	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	117	0.500	mg/L
Strontium	7440-24-6	0.297	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.140 B	0.00500	mg/L

Analyst

Approved

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LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 9/4/2008

Evergreen Analytical, Inc.

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

Client Sample ID: INJ02PT
Client Project ID: Petroglyph Wells
Date Collected: 8/20/08
Date Received: 8/21/08

Lab Work Order 08-6208
Lab Sample ID: 08-6208-01
Sample Matrix: Water

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 8/25/08
Date Analyzed: 8/25/08
Lab File ID: 82508
Method Blank: MB-16448
Dilution Factor: 1
Lab Fraction ID: 08-6208-01E

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	mg/L

Analyst **Approved**

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S - Spike Recovery outside accepted limits
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LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 9/4/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	INJ02PT	**Lab Work Order:**	08-6208
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-6208-01F
Date Collected:	8/20/2008	**Sample Matrix:**	Water
Date Received:	8/21/2008	**Lab File ID:**	015.D
Date Prepared:	9/2/2008	**Method Blank:**	MB-16546
Date Analyzed:	9/2/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
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H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 9/3/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	INJ02PT	**Lab Work Order**	08-6208
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-6208-01G
Date Collected:	8/20/08	**Sample Matrix:**	Water
Date Received:	8/21/08	**Lab File ID:**	GAS082509
Date Prepared:	8/25/08	**Method Blank:**	GB082508
Date Analyzed:	8/25/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	20.00

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

Analytes	CAS Number	Result	LQL
Ethene	74-85-1	U	0.048
Methane	74-82-8	4.2	0.016

Analyst **Approved**

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S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 8/25/08

Evergreen Analytical, Inc.

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(303) 425-6021

Client Sample ID:	INJ02PT	**Lab Work Order**	08-6208
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-6208-01G
Date Collected:	8/20/08	**Sample Matrix:**	Water
Date Received:	8/21/08	**Lab File ID:**	GAS082508
Date Prepared:	8/25/08	**Method Blank:**	GB082508
Date Analyzed:	8/25/08	**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
Ethane	74-84-0	0.0027	0.0016

Analyst **Approved**

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S - Spike Recovery outside acceptance limits
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Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 8/25/08

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(303) 425-6021

Client Sample ID:	INJ02PT	**Lab Work Order:**	08-6208
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-6208-01H
Date Collected:	8/20/08	**Sample Matrix:**	Water
Date Received:	8/21/08	**Lab File ID:**	0701007.D
Date Prepared:	9/1/08	**Method Blank:**	MB6090108
Date Analyzed:	9/1/08	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	5.00

Method: E524.2 **VOLATILE COMPOUNDS**

Prep Method: E524.2 **Units: µg/L**

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	2.5
Bromobenzene	108-86-1	U	2.5
Bromochloromethane	74-97-5	U	2.5
Bromodichloromethane	75-27-4	U	2.5
Bromoform	75-25-2	U	2.5
Bromomethane	74-83-9	U	2.5
n-Butylbenzene	104-51-8	U	2.5
sec-Butylbenzene	135-98-8	U	2.5
t-Butylbenzene	98-06-6	U	2.5
Carbon tetrachloride	56-23-5	U	2.5
Chlorobenzene	108-90-7	U	2.5
Chloroethane	75-00-3	U	2.5
Chloroform	67-66-3	U	2.5
Chloromethane	74-87-3	U	2.5
2-Chlorotoluene	95-49-8	U	2.5
4-Chlorotoluene	106-43-4	U	2.5
Dibromochloromethane	124-48-1	U	2.5
Dibromomethane	74-95-3	U	2.5
1,2-Dichlorobenzene	95-50-1	U	2.5
1,3-Dichlorobenzene	541-73-1	U	2.5
1,4-Dichlorobenzene	106-46-7	U	2.5
Dichlorodifluoromethane	75-71-8	U	2.5
1,1-Dichloroethane	75-34-3	U	2.5
1,2-Dichloroethane	107-06-2	U	2.5
1,1-Dichloroethene	75-35-4	U	2.5
cis-1,2-Dichloroethene	156-59-2	U	2.5
trans-1,2-Dichloroethene	156-60-5	U	2.5
1,2-Dichloropropane	78-87-5	U	2.5
1,3-Dichloropropane	142-28-9	U	2.5
2,2-Dichloropropane	590-20-7	U	2.5
1,1-Dichloropropene	563-58-6	U	2.5
cis-1,3-Dichloropropene	10061-01-5	U	2.5
trans-1,3-Dichloropropene	10061-02-6	U	2.5
1,3-Dichloropropene	542-75-6	U	2.5
Ethylbenzene	100-41-4	U	2.5
Hexachlorobutadiene	87-68-3	U	2.5
Isopropylbenzene	98-82-8	U	2.5
p-Isopropyltoluene	99-87-6	U	2.5
Methylene chloride	75-09-2	U	2.5
Naphthalene	91-20-3	U	2.5

Analyst **Approved**

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MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 9/4/08

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	INJ02PT	**Lab Work Order:**	08-6208
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-6208-01H
Date Collected:	8/20/08	**Sample Matrix:**	Water
Date Received:	8/21/08	**Lab File ID:**	0701007.D
Date Prepared:	9/1/08	**Method Blank:**	MB6090108
Date Analyzed:	9/1/08	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	5.00

Method: E524.2 **VOLATILE COMPOUNDS**

Prep Method: E524.2 **Units: µg/L**

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		2.5
Styrene	100-42-5	U		2.5
1,1,1,2-Tetrachloroethane	630-20-6	U		2.5
1,1,2,2-Tetrachloroethane	79-34-5	U		2.5
Tetrachloroethene	127-18-4	U		2.5
Toluene	108-88-3	U		2.5
1,2,3-Trichlorobenzene	87-61-6	U		2.5
1,2,4-Trichlorobenzene	120-82-1	U		2.5
1,1,1-Trichloroethane	71-55-6	U		2.5
1,1,2-Trichloroethane	79-00-5	U		2.5
Trichloroethene	79-01-6	U		2.5
Trichlorofluoromethane	75-69-4	U		2.5
1,2,3-Trichloropropane	96-18-4	U		2.5
1,2,4-Trimethylbenzene	95-63-6	U		2.5
1,3,5-Trimethylbenzene	108-67-8	U		2.5
Vinyl chloride	75-01-4	U *		2.5
m,p-Xylene	1330-20-7	U		2.5
o-Xylene	95-47-6	U		2.5
Xylenes, Total	1330-20-7	U		2.5
Total THM (Summation of above)		U		2.5
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	100	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	98	**QC Limits:**	70-130 %REC

TMB
Analyst

Approved

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S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 9/4/08

Tentatively Identified Compound (LSC) summary

Data Path : C:\msdchem\1\DATA\VOA60901\
Data File : 0701007.D
Acq On : 1 Sep 2008 2:43 pm
Operator : Don Chamot
Sample : 08-6208-01H DF=5
Misc : SAMP 524
ALS Vial : 7 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240828.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

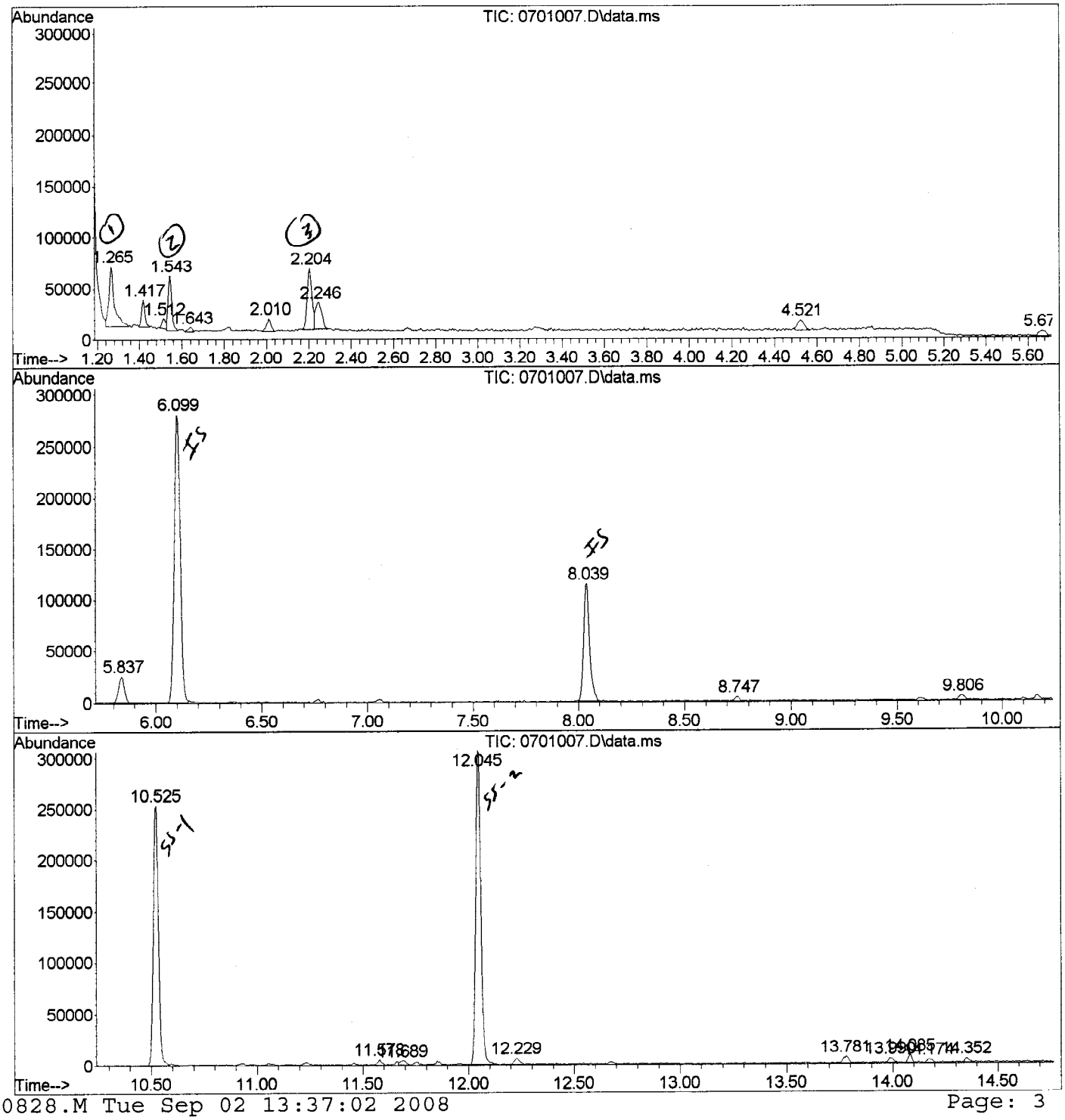
TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
3-Butenoic acid	1.265	4.9	ug/l	106524	1	6.099	543316	5.0
Butane	1.543	3.0	ug/l	63606	1	6.099	543316	5.0
Isopropyl Alcohol	2.204	4.3	ug/l	94249	1	6.099	543316	5.0

LSC Report - Integrated Chromatogram

Data Path : C:\msdchem\1\DATA\VOA60901\
Data File : 0701007.D
Acq On : 1 Sep 2008 2:43 pm
Operator : Don Chamot
Sample : 08-6208-01H DF=5
Misc : SAMP 524
ALS Vial : 7 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240828.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60901\
Data File : 0701007.D
Acq On : 1 Sep 2008 2:43 pm
Operator : Don Chamot
Sample : 08-6208-01H DF=5
Misc : SAMP 524
ALS Vial : 7 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240828.M
Quant Title : VOA4 524.2 Revision 4.1

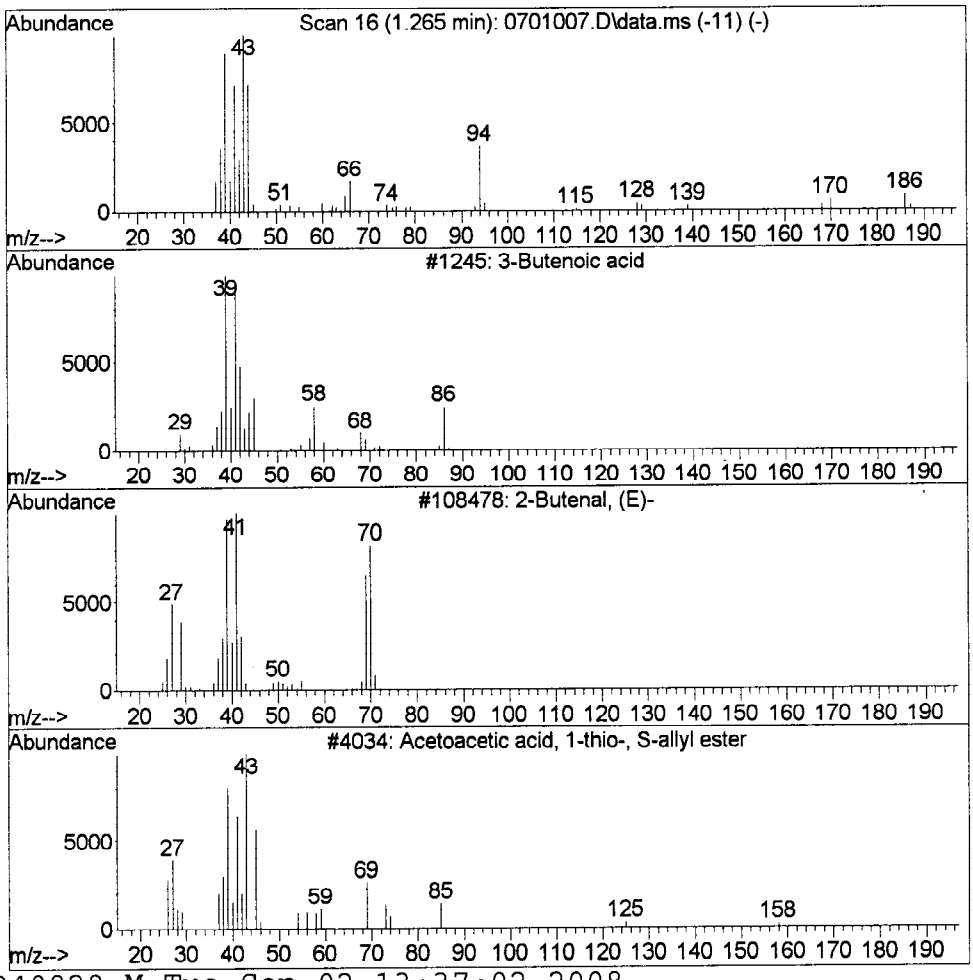
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

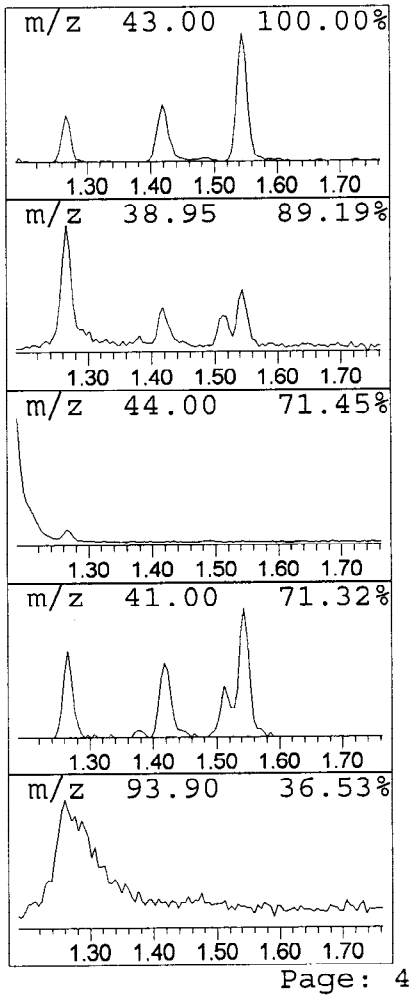
****

Peak Number 1 3-Butenoic acid Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.265	0.98 ug/l	106524	Fluorobenzene (IS-1)	6.099

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	3-Butenoic acid	86	C4H6O2	000625-38-7	53
2	2-Butenal, (E)-	70	C4H6O	000123-73-9	40
3	Acetoacetic acid, 1-thio-, S-all...	158	C7H10O2S	015780-65-1	39
4	Benzyl alcohol, .alpha.-(1-amino...	167	C9H13NO2	000054-49-9	17
5	2H-Pyran-5-carboxylic acid, 2-oxo-	140	C6H4O4	000500-05-0	10





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60901\
Data File : 0701007.D
Acq On : 1 Sep 2008 2:43 pm
Operator : Don Chamot
Sample : 08-6208-01H DF=5
Misc : SAMP 524
ALS Vial : 7 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240828.M
Quant Title : VOA4 524.2 Revision 4.1

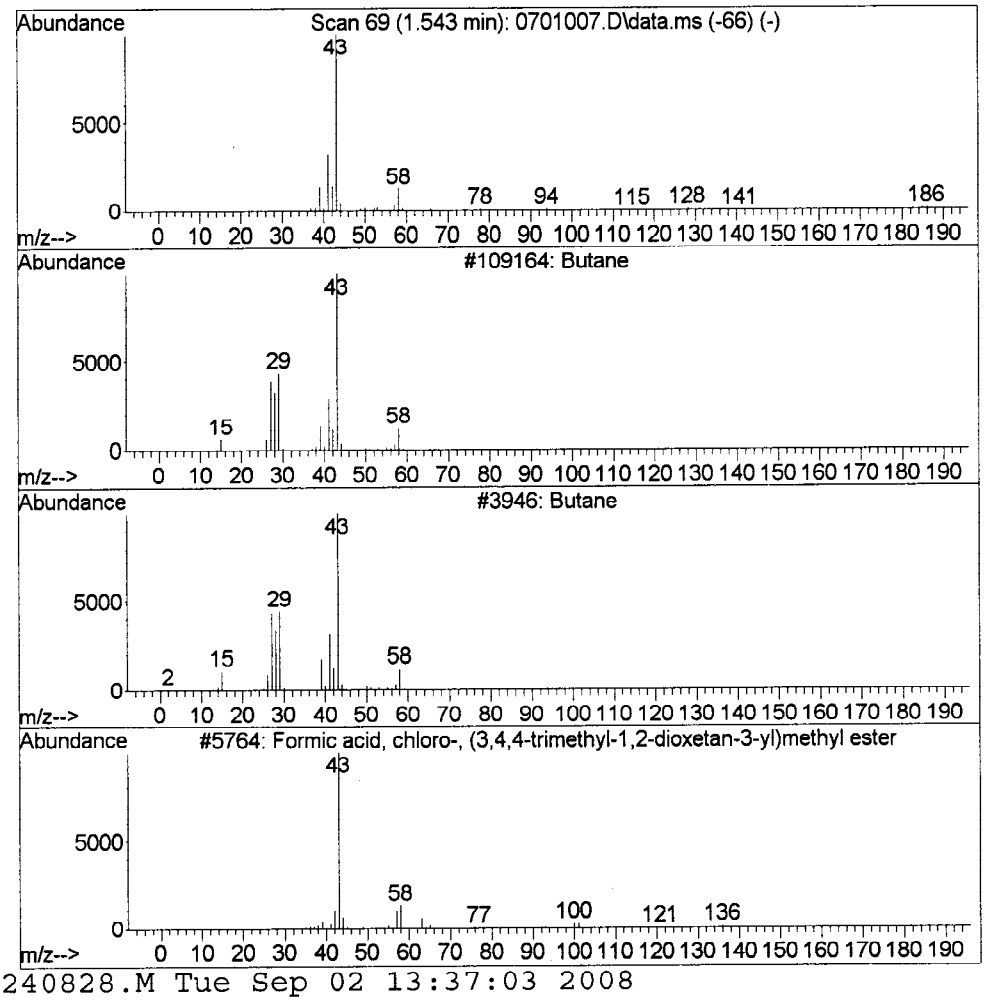
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

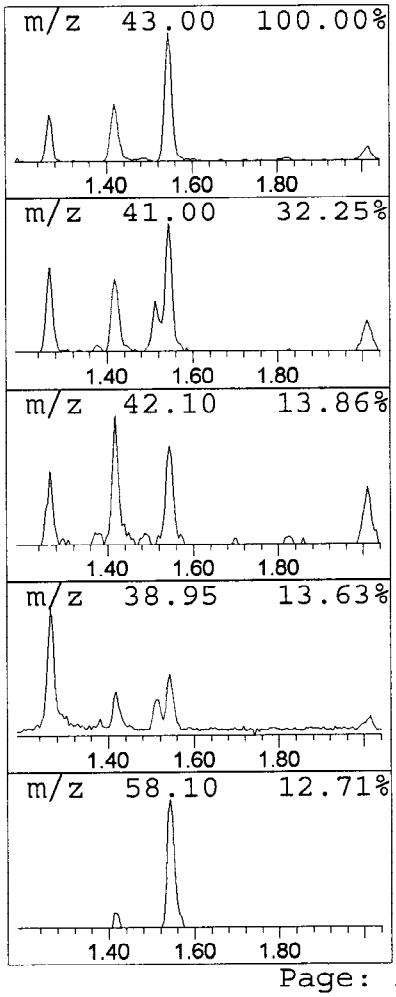
****

Peak Number 2 Butane Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.543	0.59 ug/l	63606	Fluorobenzene (IS-1)	6.099

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Butane	58	C4H10	000106-97-8	64
2	Butane	58	C4H10	000106-97-8	64
3	Formic acid, chloro-, (3,4,4-tri...	194	C7H11ClO4	107323-92-2	9
4	Acetic acid, 2-propenyl ester	100	C5H8O2	000591-87-7	9
5	p-Dioxin, 2,3-dihydro-2,5,6-trim...	128	C7H12O2	003973-27-1	9





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60901\
Data File : 0701007.D
Acq On : 1 Sep 2008 2:43 pm
Operator : Don Chamot
Sample : 08-6208-01H DF=5
Misc : SAMP 524
ALS Vial : 7 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240828.M
Quant Title : VOA4 524.2 Revision 4.1

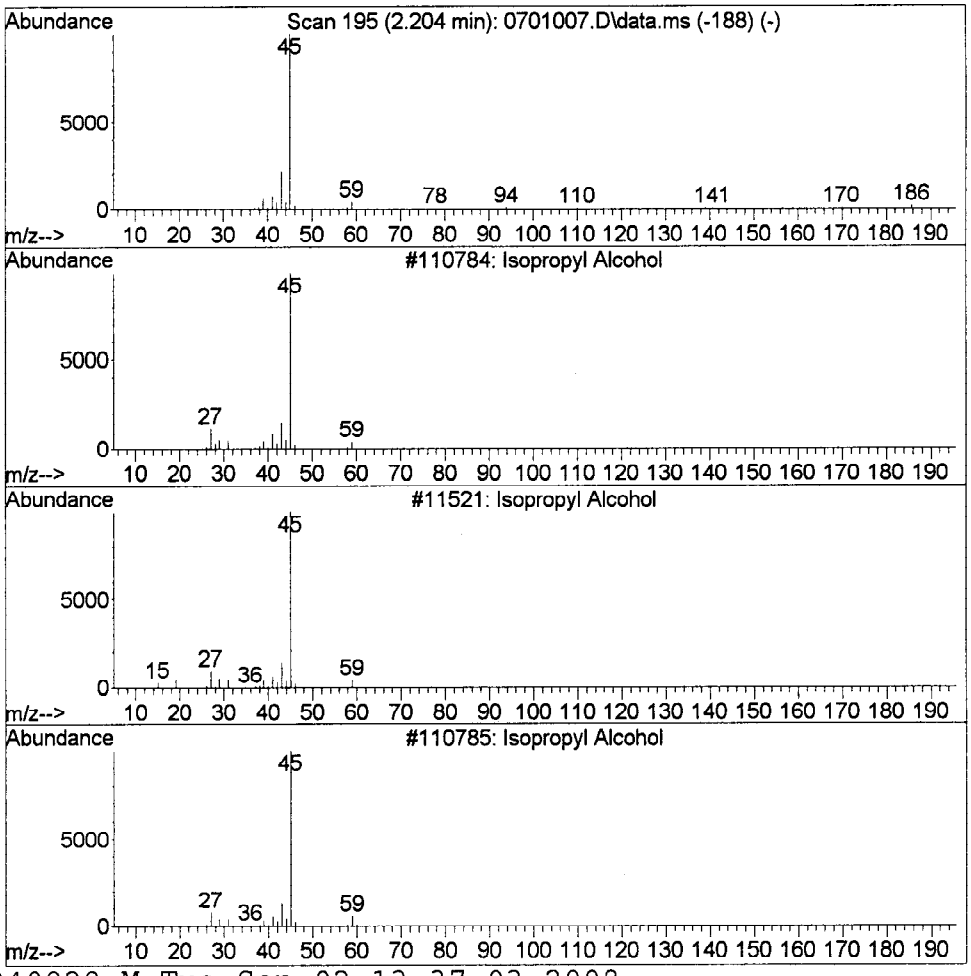
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

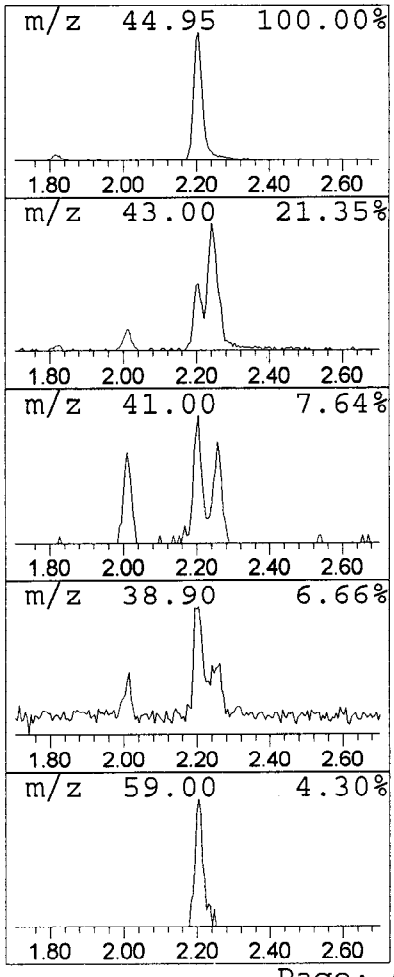
****

Peak Number 3 Isopropyl Alcohol Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.204	0.87 ug/l	94249	Fluorobenzene (IS-1)	6.099

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Isopropyl Alcohol	60	C3H8O	000067-63-0	64
2	Isopropyl Alcohol	60	C3H8O	000067-63-0	64
3	Isopropyl Alcohol	60	C3H8O	000067-63-0	56
4	Isopropyl Alcohol	60	C3H8O	000067-63-0	56
5	Isopropyl Alcohol	60	C3H8O	000067-63-0	43





QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: R41485

Sample ID: **MB 082108**	SampType: **MBLK**	TestCode: **anions_w**	Run ID: **IC-2000_080821A**	Prep Date: **8/21/2008**	Units: **mg/L**
	Batch ID: **R41485**	TestNo: **E300.0**	FileID: **5**	Analysis Date: **8/21/2008**	SeqNo: **729903**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0	0.50									
Nitrite-N	0	0.0040									
Bromide	0	0.050									
Nitrate-N	0	0.010									
Sulfate	0	0.50									

Sample ID: **LCS 082108**	SampType: **LCS**	TestCode: **anions_w**	Run ID: **IC-2000_080821A**	Prep Date: **8/21/2008**	Units: **mg/L**
	Batch ID: **R41485**	TestNo: **E300.0**	FileID: **6**	Analysis Date: **8/21/2008**	SeqNo: **729904**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	18.75	2.5	20	0	93.8	90	110	0	0		
Nitrite-N	6.357	0.020	6.09	0	104	90	110	0	0		
Bromide	20.15	0.25	20	0	101	90	110	0	0		
Nitrate-N	4.406	0.050	4.518	0	97.5	90	110	0	0		
Sulfate	29.73	2.5	30	0	99.1	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *02-Sep-08*

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 08/27/08**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080827A**	Prep Date: **8/27/2008**	Units: **mg/L CaCO3**
	Batch ID: **R41608**	TestNo: **SM2320B**	FileID: **1**	Analysis Date: **8/27/2008**	SeqNo: **732045**

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

Sample ID **MBLK 06/27/08**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080827A**	Prep Date: **8/27/2008**	Units: **mg/L CaCO3**
	Batch ID: **R41608**	TestNo: **SM2320B**	FileID: **89**	Analysis Date: **8/27/2008**	SeqNo: **732158**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080827A**	Prep Date: **8/27/2008**	Units: **mg/L CaCO3**
	Batch ID: **R41608**	TestNo: **SM2320B**	FileID: **2**	Analysis Date: **8/27/2008**	SeqNo: **732046**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	99.55	5.0	100	0	99.5	90	110	0	0		

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080827A**	Prep Date: **8/27/2008**	Units: **mg/L CaCO3**
	Batch ID: **R41608**	TestNo: **SM2320B**	FileID: **90**	Analysis Date: **8/27/2008**	SeqNo: **732159**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	100.6	5.0	100	0	101	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 8/29/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080829A**	Prep Date: **8/29/2008**	Units: **mg/L**
	Batch ID: **R41674**	TestNo: **SM4500-CN**	FileID: **47**	Analysis Date: **8/29/2008**	SeqNo: **733851**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080829A**	Prep Date: **8/29/2008**	Units: **mg/L**
	Batch ID: **R41674**	TestNo: **SM4500-CN**	FileID: **48**	Analysis Date: **8/29/2008**	SeqNo: **733852**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.1021	0.010	0.104	0	98.2	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID **MBLK 082208**	SampType: **MBLK**	TestCode: **F_W**	Run ID: **F_080822B**	Prep Date: **8/22/2008**	Units: **mg/L**
	Batch ID: **R41490**	TestNo: **SM 4500-F C**	FileID: **423**	Analysis Date: **8/22/2008**	SeqNo: **729966**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID **LCS**	SampType: **LCS**	TestCode: **F_W**	Run ID: **F_080822B**	Prep Date: **8/22/2008**	Units: **mg/L**
	Batch ID: **R41490**	TestNo: **SM 4500-F C**	FileID: **424**	Analysis Date: **8/22/2008**	SeqNo: **729967**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	9.9	0.20	10	0	99	95	105	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_DW

Sample ID **LCS-R41455**	SampType: **LCS**	TestCode: **PH_DW**	Run ID: **PH_080821A**	Prep Date: **8/21/2008**	Units: **pH Units**
	Batch ID: **R41455**	TestNo: **E150.1**	FileID:	Analysis Date: **8/21/2008**	SeqNo: **729206**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.01	1.00	8	0	100	99.3	100.7	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 082508**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080825B**	Prep Date: **8/25/2008**	Units: **mg/L**
	Batch ID: **R41530**	TestNo: **SM 4500-S C/**	FileID: **62**	Analysis Date: **8/25/2008**	SeqNo: **730694**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080825B**	Prep Date: **8/25/2008**	Units: **mg/L**
	Batch ID: **R41530**	TestNo: **SM 4500-S C/**	FileID: **63**	Analysis Date: **8/25/2008**	SeqNo: **730695**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.6	0.50	1.7	0	94.1	60	120	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK 082608**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080827B**	Prep Date: **8/26/2008**	Units: **mg/L**
	Batch ID: **R41602**	TestNo: **SM 2540C**	FileID: **47**	Analysis Date: **8/26/2008**	SeqNo: **731976**

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_080827B**	Prep Date: **8/26/2008**	Units: **mg/L**
	Batch ID: **R41602**	TestNo: **SM 2540C**	FileID: **48**	Analysis Date: **8/26/2008**	SeqNo: **731977**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	406	10.0	400	0	102	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 08/25/08**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080825A**	Prep Date: **8/25/2008**	Units: **mg/L**
	Batch ID: **R41549**	TestNo: **SM 2540 D**	FileID: 1	Analysis Date: **8/25/2008**	SeqNo: **730918**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080825A**	Prep Date: **8/25/2008**	Units: **mg/L**
	Batch ID: **R41549**	TestNo: **SM 2540 D**	FileID: **2**	Analysis Date: **8/25/2008**	SeqNo: **730919**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	297	5.0	300	0	99	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *04-Sep-08*

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16443

Sample ID: **MB-16443**	SampType: **MBLK**	TestCode: **200.8_TR**	Run ID: **ICPMS_080825A**	Prep Date: **8/21/2008**	Units: **mg/L**
	Batch ID: **16443**	TestNo: **E200.8**	FileID: **080825A.B\021SMPL.D**	Analysis Date: **8/25/2008**	SeqNo: **731119**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	U	0.00200									
Arsenic	U	0.00200									
Barium	U	0.0100									
Beryllium	U	0.00100									
Boron	U	0.200									
Cadmium	U	0.000500									
Calcium	U	0.400									
Chromium	U	0.00220									
Copper	U	0.0100									
Iron	U	0.200									
Lead	U	0.00100									
Magnesium	U	0.0500									
Manganese	U	0.00500									
Molybdenum	U	0.00500									
Nickel	U	0.0100									
Potassium	U	0.125									
Selenium	U	0.00200									
Silver	U	0.000200									
Sodium	U	0.500									
Strontium	U	0.0980									
Thallium	U	0.00100									
Zinc	0.01425	0.00500									

Sample ID: **LCS-16443**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080825A**	Prep Date: **8/21/2008**	Units: **mg/L**
	Batch ID: **16443**	TestNo: **E200.8**	FileID: **080825A.B\022SMPL.D**	Analysis Date: **8/25/2008**	SeqNo: **731120**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.01031	0.00200	0.01	0	103	85	115	0	0		
Arsenic	0.1017	0.00200	0.1	0	102	85	115	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16443

Sample ID: **LCS-16443**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080825A**	Prep Date: **8/21/2008**	Units: **mg/L**
	Batch ID: **16443**	TestNo: **E200.8**	FileID: **080825A.B\022SMPL.D**	Analysis Date: **8/25/2008**	SeqNo: **731120**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.0942	0.0100	0.1	0.0008135	94.2	85	115	0	0		
Beryllium	0.01006	0.00100	0.01	0	101	85	115	0	0		
Boron	0.974	0.200	1	0.02012	97.4	85	115	0	0		
Cadmium	0.00987	0.000500	0.01	0	98.7	85	115	0	0		
Chromium	0.1002	0.00220	0.1	0.001462	100	85	115	0	0		
Copper	0.0989	0.0100	0.1	0.00358	98.9	85	115	0	0		
Iron	0.9305	0.200	1	0	93.1	85	115	0	0		
Lead	0.01996	0.00100	0.02	0.0005485	99.8	85	115	0	0		
Magnesium	0.991	0.0500	1	0	99.1	85	115	0	0		
Manganese	0.2031	0.00500	0.2	0.0004139	102	85	115	0	0		
Molybdenum	0.09695	0.00500	0.1	0	97	85	115	0	0		
Nickel	0.09645	0.0100	0.1	0.000859	96.5	85	115	0	0		
Potassium	1.056	0.125	1	0.04186	106	85	115	0	0		
Selenium	0.02092	0.00200	0.02	0	105	85	115	0	0		
Silver	0.009945	0.000200	0.01	0.00003701	99.5	85	115	0	0		
Sodium	1.109	0.500	1	0.0791	111	85	115	0	0		
Strontium	U	0.0980	0.1	0.001325	96.8	85	115	0	0		
Thallium	0.00524	0.00100	0.005	0	105	85	115	0	0		
Zinc	0.2307	0.00500	0.2	0.01425	108	85	115	0	0		B

Sample ID: **LCS-16443**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080826A**	Prep Date: **8/21/2008**	Units: **mg/L**
	Batch ID: **16443**	TestNo: **E200.8**	FileID: **080826A.B\021SMPL.D**	Analysis Date: **8/26/2008**	SeqNo: **731779**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	1.049	0.400	1	0.1803	105	85	115	0	0		

Qualifiers:

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X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16448

Sample ID: **MB-16448**	SampType: **MBLK**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080825B**	Prep Date: **8/25/2008**	Units: **mg/L**
	Batch ID: **16448**	TestNo: **E245.1**	FileID: **82508**	Analysis Date: **8/25/2008**	SeqNo: **731204**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0	0.000100	0	0	0	0	0	0	0		

Sample ID: **LCS-16448**	SampType: **LCS**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080825B**	Prep Date: **8/25/2008**	Units: **mg/L**
	Batch ID: **16448**	TestNo: **E245.1**	FileID: **82508**	Analysis Date: **8/25/2008**	SeqNo: **731205**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00104	0.000100	0.001	0	104	85	115	0	0		

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X - See case narrative

Evergreen Analytical, Inc.

Date: *03-Sep-08*

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16546**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080902A**	Prep Date: **9/2/2008**	Units: **µg/L**
	Batch ID: **16546**	TestNo: **E504.1**	FileID: **012.D**	Analysis Date: **9/2/2008**	SeqNo: **734415**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16546**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080902A**	Prep Date: **9/2/2008**	Units: **µg/L**
	Batch ID: **16546**	TestNo: **E504.1**	FileID: **013.D**	Analysis Date: **9/2/2008**	SeqNo: **734416**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.292	0.020	0.25	0	117	70	130	0	0		
1,2-Dibromoethane	0.266	0.010	0.25	0	106	70	130	0	0		

Sample ID: **LCS-16546-2**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080902A**	Prep Date: **9/2/2008**	Units: **µg/L**
	Batch ID: **16546**	TestNo: **E504.1**	FileID: **014.D**	Analysis Date: **9/2/2008**	SeqNo: **734417**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.284	0.020	0.25	0	114	70	130	0	0		
1,2-Dibromoethane	0.272	0.010	0.25	0	109	70	130	0	0		

Sample ID: **08-6208-01FMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080902A**	Prep Date: **9/2/2008**	Units: **µg/L**
Client ID: **INJ02PT**	Batch ID: **16546**	TestNo: **E504.1**	FileID: **016.D**	Analysis Date: **9/2/2008**	SeqNo: **734419**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.168	0.020	1	0	117	65	135	0	0		
1,2-Dibromoethane	1.064	0.010	1	0	106	65	135	0	0		

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Evergreen Analytical, Inc.

Date: *25-Aug-08*

Work Order: 08-6208

Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS082508

Sample ID: **GB082508** SampType: **MBLK** TestCode: **MEEP_W** Run ID: **FID4_080825A** Prep Date: **8/25/08** Units: **mg/L**
Batch ID: **GAS082508** TestNo: **RSKSOP175** FileID: **GAS082504** Analysis Date: **8/25/08** SeqNo: **730799**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS082508** SampType: **LCS** TestCode: **MEEP_W** Run ID: **FID4_080825A** Prep Date: **8/25/08** Units: **mg/L**
Batch ID: **GAS082508** TestNo: **RSKSOP175** FileID: **GAS082505** Analysis Date: **8/25/08** SeqNo: **730800**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.072	0.016	0.9548	0	112	70	130	0	0		
Ethene	1.219	0.024	0.8913	0	137	70	140	0	0		
Methane	0.5454	0.0080	0.5094	0	107	70	130	0	0		

Sample ID: **LCSD082508** SampType: **LCSD** TestCode: **MEEP_W** Run ID: **FID4_080825A** Prep Date: **8/25/08** Units: **mg/L**
Batch ID: **GAS082508** TestNo: **RSKSOP175** FileID: **GAS082506** Analysis Date: **8/25/08** SeqNo: **730801**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.123	0.016	0.9548	0	118	70	130	1.072	4.65	30	
Ethene	1.251	0.024	0.8913	0	140	70	140	1.219	2.58	30	
Methane	0.5734	0.0080	0.5094	0	113	70	130	0.5454	5.00	30	

Sample ID: **08-6208-01GMS** SampType: **MS** TestCode: **MEEP_W** Run ID: **FID4_080825A** Prep Date: **8/25/08** Units: **mg/L**
Client ID: **INJ02PT** Batch ID: **GAS082508** TestNo: **RSKSOP175** FileID: **GAS082510** Analysis Date: **8/25/08** SeqNo: **730797**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	0.8899	0.032	0.9548	0	93.2	70	130	0	0		
Ethene	0.9942	0.048	0.8913	0	112	70	140	0	0		
Methane	4.58	0.016	0.5094	4.199	74.7	70	130	0	0		

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Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS082508

Sample ID: **08-6208-01GMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080825A**	Prep Date: **8/25/08**	Units: **mg/L**
Client ID: **INJ02PT**	Batch ID: **GAS082508**	TestNo: **RSKSOP175**	FileID: **GAS082511**	Analysis Date: **8/25/08**	SeqNo: **730798**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	0.8848	0.032	0.9548	0	92.7	70	130	0.8899	0.569	30	
Ethene	0.9944	0.048	0.8913	0	112	70	140	0.9942	0.0262	30	
Methane	4.418	0.016	0.5094	4.199	42.9	70	130	4.58	3.60	30	S

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Evergreen Analytical, Inc.

Date: *04-Sep-08*

Work Order: 08-6208

Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID **MB6090108**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **9/1/08**	SeqNo: **734862**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

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Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID **MB6090108**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **9/1/08**	SeqNo: **734862**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

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X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID **MB6090108**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **9/1/08**	SeqNo: **734862**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	4.82	0	5	0	96.4	70	130	0	0		
Surr: 4-Bromofluorobenzene	4.82	0	5	0	96.4	70	130	0	0		

Sample ID **LCS6090108**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **9/1/08**	SeqNo: **734863**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.15	0.50	5	0	103	70	130	0	0		
Bromobenzene	5.33	0.50	5	0	107	70	130	0	0		
Bromochloromethane	5.6	0.50	5	0	112	70	130	0	0		
Bromodichloromethane	5.47	0.50	5	0	109	70	130	0	0		
Bromoform	5.55	0.50	5	0	111	70	130	0	0		
Bromomethane	6.15	0.50	5	0	123	70	130	0	0		
n-Butylbenzene	5.47	0.50	5	0	109	70	130	0	0		
sec-Butylbenzene	5.3	0.50	5	0	106	70	130	0	0		
t-Butylbenzene	5.19	0.50	5	0	104	70	130	0	0		
Carbon tetrachloride	5.62	0.50	5	0	112	70	130	0	0		
Chlorobenzene	5.13	0.50	5	0	103	70	130	0	0		
Chloroethane	4.86	0.50	5	0	97.2	70	130	0	0		
Chloroform	5.31	0.50	5	0	106	70	130	0	0		
Chloromethane	4.74	0.50	5	0	94.8	70	130	0	0		
2-Chlorotoluene	5.23	0.50	5	0	105	70	130	0	0		
4-Chlorotoluene	5.11	0.50	5	0	102	70	130	0	0		
Dibromochloromethane	5.21	0.50	5	0	104	70	130	0	0		
Dibromomethane	5.24	0.50	5	0	105	70	130	0	0		
1,2-Dichlorobenzene	5.19	0.50	5	0	104	70	130	0	0		
1,3-Dichlorobenzene	5.13	0.50	5	0	103	70	130	0	0		
1,4-Dichlorobenzene	5.01	0.50	5	0	100	70	130	0	0		
Dichlorodifluoromethane	6.63	0.50	5	0	133	70	130	0	0		S
1,1-Dichloroethane	5.19	0.50	5	0	104	70	130	0	0		
1,2-Dichloroethane	5.24	0.50	5	0	105	70	130	0	0		

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X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID **LCS6090108**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **9/1/08**	SeqNo: **734863**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	5.48	0.50	5	0	110	70	130	0	0		
cis-1,2-Dichloroethene	5.35	0.50	5	0	107	70	130	0	0		
trans-1,2-Dichloroethene	5.19	0.50	5	0	104	70	130	0	0		
1,2-Dichloropropane	5.36	0.50	5	0	107	70	130	0	0		
1,3-Dichloropropane	5.42	0.50	5	0	108	70	130	0	0		
2,2-Dichloropropane	5.66	0.50	5	0	113	70	130	0	0		
1,1-Dichloropropene	5.21	0.50	5	0	104	70	130	0	0		
cis-1,3-Dichloropropene	5.69	0.50	5	0	114	70	130	0	0		
trans-1,3-Dichloropropene	5.25	0.50	5	0	105	70	130	0	0		
Ethylbenzene	5.28	0.50	5	0	106	70	130	0	0		
Hexachlorobutadiene	5.56	0.50	5	0	111	70	130	0	0		
Isopropylbenzene	4.58	0.50	5	0	91.6	70	130	0	0		
p-Isopropyltoluene	5.24	0.50	5	0	105	70	130	0	0		
Methylene chloride	5.6	0.50	5	0	112	70	130	0	0		
Naphthalene	5.27	0.50	5	0	105	70	130	0	0		
n-Propylbenzene	5.25	0.50	5	0	105	70	130	0	0		
Styrene	5.38	0.50	5	0	108	70	130	0	0		
1,1,1,2-Tetrachloroethane	5.61	0.50	5	0	112	70	130	0	0		
1,1,2,2-Tetrachloroethane	5.31	0.50	5	0	106	70	130	0	0		
Tetrachloroethene	5.4	0.50	5	0	108	70	130	0	0		
Toluene	5.2	0.50	5	0	104	70	130	0	0		
1,2,3-Trichlorobenzene	5.47	0.50	5	0	109	70	130	0	0		
1,2,4-Trichlorobenzene	5.4	0.50	5	0	108	70	130	0	0		
1,1,1-Trichloroethane	5.34	0.50	5	0	107	70	130	0	0		
1,1,2-Trichloroethane	5.4	0.50	5	0	108	70	130	0	0		
Trichloroethene	5.38	0.50	5	0	108	70	130	0	0		
Trichlorofluoromethane	5.02	0.50	5	0	100	70	130	0	0		
1,2,3-Trichloropropane	5.31	0.50	5	0	106	70	130	0	0		
1,2,4-Trimethylbenzene	5.35	0.50	5	0	107	70	130	0	0		
1,3,5-Trimethylbenzene	5.37	0.50	5	0	107	70	130	0	0		
Vinyl chloride	5.88	0.50	5	0	118	70	130	0	0		

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X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID **LCS6090108**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **9/1/08**	SeqNo: **734863**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	10.25	0.50	10	0	103	70	130	0	0		
o-Xylene	5.26	0.50	5	0	105	70	130	0	0		
1,3-Dichloropropene	10.94	0.50	10	0	109	70	130	0	0		
Xylenes, Total	15.51	0.50	15	0	103	70	130	0	0		
Total THM (Summation of above)	21.54	0.50	20	0	108	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	5.17	0	5	0	103	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.1	0	5	0	102	70	130	0	0		

Sample ID **LCSD6090108**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **2001020.D**	Analysis Date: **9/1/08**	SeqNo: **734866**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.04	0.50	5	0	101	70	130	5.15	2.16	30	
Bromobenzene	5.12	0.50	5	0	102	70	130	5.33	4.02	30	
Bromochloromethane	5.41	0.50	5	0	108	70	130	5.6	3.45	30	
Bromodichloromethane	5.45	0.50	5	0	109	70	130	5.47	0.366	30	
Bromoform	4.92	0.50	5	0	98.4	70	130	5.55	12.0	30	
Bromomethane	3.63	0.50	5	0	72.6	70	130	6.15	51.5	30	R
n-Butylbenzene	5.21	0.50	5	0	104	70	130	5.47	4.87	30	
sec-Butylbenzene	5.09	0.50	5	0	102	70	130	5.3	4.04	30	
t-Butylbenzene	4.99	0.50	5	0	99.8	70	130	5.19	3.93	30	
Carbon tetrachloride	5.33	0.50	5	0	107	70	130	5.62	5.30	30	
Chlorobenzene	5	0.50	5	0	100	70	130	5.13	2.57	30	
Chloroethane	4.76	0.50	5	0	95.2	70	130	4.86	2.08	30	
Chloroform	5.18	0.50	5	0	104	70	130	5.31	2.48	30	
Chloromethane	3.55	0.50	5	0	71	70	130	4.74	28.7	30	
2-Chlorotoluene	5.08	0.50	5	0	102	70	130	5.23	2.91	30	
4-Chlorotoluene	5.02	0.50	5	0	100	70	130	5.11	1.78	30	
Dibromochloromethane	4.96	0.50	5	0	99.2	70	130	5.21	4.92	30	
Dibromomethane	5.22	0.50	5	0	104	70	130	5.24	0.382	30	
1,2-Dichlorobenzene	5.12	0.50	5	0	102	70	130	5.19	1.36	30	

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID **LCSD6090108**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **2001020.D**	Analysis Date: **9/1/08**	SeqNo: **734866**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	4.96	0.50	5	0	99.2	70	130	5.13	3.37	30	
1,4-Dichlorobenzene	4.88	0.50	5	0	97.6	70	130	5.01	2.63	30	
Dichlorodifluoromethane	6.38	0.50	5	0	128	70	130	6.63	3.84	30	
1,1-Dichloroethane	5.09	0.50	5	0	102	70	130	5.19	1.95	30	
1,2-Dichloroethane	5.21	0.50	5	0	104	70	130	5.24	0.574	30	
1,1-Dichloroethene	5.17	0.50	5	0	103	70	130	5.48	5.82	30	
cis-1,2-Dichloroethene	5.38	0.50	5	0	108	70	130	5.35	0.559	30	
trans-1,2-Dichloroethene	5.08	0.50	5	0	102	70	130	5.19	2.14	30	
1,2-Dichloropropane	5.25	0.50	5	0	105	70	130	5.36	2.07	30	
1,3-Dichloropropane	5.26	0.50	5	0	105	70	130	5.42	3.00	30	
2,2-Dichloropropane	5.28	0.50	5	0	106	70	130	5.66	6.95	30	
1,1-Dichloropropene	5.02	0.50	5	0	100	70	130	5.21	3.71	30	
cis-1,3-Dichloropropene	5.33	0.50	5	0	107	70	130	5.69	6.53	30	
trans-1,3-Dichloropropene	4.89	0.50	5	0	97.8	70	130	5.25	7.10	30	
Ethylbenzene	5.09	0.50	5	0	102	70	130	5.28	3.66	30	
Hexachlorobutadiene	5.29	0.50	5	0	106	70	130	5.56	4.98	30	
Isopropylbenzene	4.47	0.50	5	0	89.4	70	130	4.58	2.43	30	
p-Isopropyltoluene	4.97	0.50	5	0	99.4	70	130	5.24	5.29	30	
Methylene chloride	5.3	0.50	5	0	106	70	130	5.6	5.50	30	
Naphthalene	5.07	0.50	5	0	101	70	130	5.27	3.87	30	
n-Propylbenzene	5.03	0.50	5	0	101	70	130	5.25	4.28	30	
Styrene	4.99	0.50	5	0	99.8	70	130	5.38	7.52	30	
1,1,1,2-Tetrachloroethane	5.25	0.50	5	0	105	70	130	5.61	6.63	30	
1,1,2,2-Tetrachloroethane	5.25	0.50	5	0	105	70	130	5.31	1.14	30	
Tetrachloroethene	5.1	0.50	5	0	102	70	130	5.4	5.71	30	
Toluene	5	0.50	5	0	100	70	130	5.2	3.92	30	
1,2,3-Trichlorobenzene	5.16	0.50	5	0	103	70	130	5.47	5.83	30	
1,2,4-Trichlorobenzene	5.1	0.50	5	0	102	70	130	5.4	5.71	30	
1,1,1-Trichloroethane	5.11	0.50	5	0	102	70	130	5.34	4.40	30	
1,1,2-Trichloroethane	5	0.50	5	0	100	70	130	5.4	7.69	30	
Trichloroethene	5.17	0.50	5	0	103	70	130	5.38	3.98	30	

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-6208
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID **LCSD6090108**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080901A**	Prep Date: **9/1/08**	Units: **µg/L**
	Batch ID: **R41744**	TestNo: **E524.2**	FileID: **2001020.D**	Analysis Date: **9/1/08**	SeqNo: **734866**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	4.87	0.50	5	0	97.4	70	130	5.02	3.03	30	
1,2,3-Trichloropropane	5.17	0.50	5	0	103	70	130	5.31	2.67	30	
1,2,4-Trimethylbenzene	5.1	0.50	5	0	102	70	130	5.35	4.78	30	
1,3,5-Trimethylbenzene	5.1	0.50	5	0	102	70	130	5.37	5.16	30	
Vinyl chloride	5.46	0.50	5	0	109	70	130	5.88	7.41	30	
m,p-Xylene	9.95	0.50	10	0	99.5	70	130	10.25	2.97	30	
o-Xylene	5	0.50	5	0	100	70	130	5.26	5.07	30	
1,3-Dichloropropene	10.22	0.50	10	0	102	70	130	10.94	6.81	30	
Xylenes, Total	14.95	0.50	15	0	99.7	70	130	15.51	3.68	30	
Total THM (Summation of above)	20.51	0.50	20	0	103	70	130	21.54	4.90	30	
Surr: 1,2-Dichlorobenzene-d4	5.04	0	5	0	101	70	130	0	0	0	
Surr: 4-Bromofluorobenzene	5.1	0	5	0	102	70	130	0	0	0	

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical Laboratory

September 08, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-6208
Client Project ID: Petroglyph Wells

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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,

Kaprie L. Hollman

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

001

WORK ORDER Summary Evergreen Analytical, Inc. 08-5120

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

7/31/2008 10:29:25 AM

Client Project ID: Petroglyph Wells

QC Level: LEVEL I+

Comments: PDF and Pinery EDD

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-5120-01A	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	RAD226/228	Radium 226/228	☐	☐	8/01/08	1/13/09
08-5120-01B	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	ALBETA	Gross Alpha-Beta	☐	☐	8/01/08	1/13/09
08-5120-01B	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	TS_SUB	Total Solids for Gross A B	☐	☐	8/01/08	7/24/08
08-5120-01C	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	8/01/08	7/19/08
08-5120-01D	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	F_W	Fluoride	☐	☐	8/01/08	8/14/08
08-5120-01E	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	200.8_TR *	200.8: Total Metals	☐	☐	8/01/08	1/13/09
08-5120-01E	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	8/01/08	8/14/08
08-5120-01F	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	504 *	504: Standard List	☐	☐	8/01/08	7/31/08
08-5120-01G	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	MEEP_W *	RSK175M: MEE	☐	☐	8/01/08	7/31/08
08-5120-01H	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	524 *	524.2: Standard List	☐	☐	8/01/08	7/31/08
08-5120-01H	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	VOATICS	VOA TICS (Largest 10)	☐	☐	8/01/08	7/31/08
08-5120-01I	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	CN_TW	Total Cyanide	☐	☐	8/01/08	7/31/08
08-5120-01J	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	SULF_W	Total Sulfide	☐	☐	8/01/08	7/24/08
08-5120-01K	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	ALK_WGRP *	Alkalinity	☐	☐	8/01/08	7/31/08
08-5120-01K	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	PH_W	Discharge Water pH	☐	☐	8/01/08	7/17/08
08-5120-01K	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	8/01/08	7/24/08
08-5120-01K	Inj 03 PT	Groundwater	7/17/08 1400	7/18/08	TSS	Total Suspended Solids (TSS)	☐	☐	8/01/08	7/24/08

Definitions: * - Test Code has a Select List

002

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

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☒ PDF ☒ EDD
REPORT CHROMATOGRAMS ☐ YES

Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571
Project ID# Petroglyph Wells
P.O. _____ Quote 10105
Sampler T. Melland

NOTE: *Identify Known Hazards Below*

SAMPLE IDENTIFICATION	DATE SAMPLED	TIME	No. of Containers	MATRIX: 1) Drinking Water or 2) Discharge Water or Ground Water (circle one)	Soil / Solid / Air / Gas	Oil / Sludge / Wipe	ANALYSES (check anaylsis): Radium 226/228	Gross Alpha-Beta	300.0 DW Anions by IC	Fluoride	200.8 Drinking water w Regulated	Total Solids Gross AB	504.1 EDB&DBCP	RSKSOP-175 M	VOA TICs	Total Cyanide	Total Sulfide	TDS, TSS, pH	For Laboratory Use Only
Inj03 PT	7-17-08	14:00					4	1	1	1	1	1	2	3	3	1	1	1	W.O. # 08-5120
																			B.O.F. # 23779
																			C/S (O) 1298 hrs
																			C/S (I) 1298 hrs
																			Temp. °C 9.7 / Ice ✓
																			Seals Present Y / N / NA
																			Samples Pres Y / N / NA
																			Headspace Y N / NA
																			By MO /
			10 bottles																01
																			metals pH<2
																			on pH >12
																			visual fail turbidity
																			use 200.8 FR for
																			metals. mo
			Iceley,																

Evergreen Analytical, Inc.

Date: *14-Aug-08*

Lab Order: 08-5120
Client Project ID Petroglyph Wells

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 9.7 °C but samples were received on ice.
Sample(s) were received in good condition and in the proper container.
The pH sample was received out of holding time.
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 (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of RCRA samples meet the requirements of NELAC and Utah Rule R444-14 unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained. CMS

CLIENT SERVICES

The temperature of the sample at receipt exceeded the EPA requirement of <6 degrees C. Alkalinity was logged in according to the bottle order and quote. IT was not requested on the COC. There are no other anomalies to report. PM

GENERAL CHEMISTRY

The pH required analysis out of holding time (H). There are no other anomalies to report. BP

METALS ANALYSIS

Zinc was detected in the method blank at 0.016 mg/L. This value was not subtracted from the sample result. There are no other anomalies to report. CMS

GAS CHROMATOGRAPHY

Method RSK175M: The laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) recovery for Ethene is 2 % above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS
Method 504.1: There are no anomalies to report. AE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Evergreen Analytical, Inc.

Date: *14-Aug-08*

Lab Order: 08-5120

Client Project ID Petroglyph Wells

CASE NARRATIVE

Method 524.2: An LCSD analysis was performed but not reported as it was beyond the allowed instrument tune time due to an instrument error. Only one LCS is required by the 524 method. There are no other anomalies to report. DC

005

AUG 14 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 7939

WorkOrder: 08-5120

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

18-Jul-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests (4)						
				ALPHABETA	RAD226/228	TS				
08-5120-01A	Groundwater	7/17/2008 2:00:00 PM	1LPHNO3		1					
08-5120-01B	Groundwater	7/17/2008 2:00:00 PM	1LPHNO3	1		1				

Comments:

Relinquished by:	Ken Fh	**Date/Time** 7-14-04 2:25 PM	**Received by:**		**Date/Time** 7/18/08 1425
Relinquished by:			**Received by:**		

AUG 14 2008

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 13, 2008
HRI PROJECT	009-93
HRI SERIES NO	G365/08
DATE REC'D.	7/18/2008
CUST. P.O.#	7939

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G365/08-1

SAMPLE IDENTIFICATION: 08-5120-01A, B - sampled on 07/17/2008 @ 1400

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	2.0(+-3.0)	2.5	SM 7110 B	8/12/2008 @ 0617	EDF
Gross Beta (+-Precision*), pCi/l (T)	1.7(+-2.1)	2.0	SM 7110 B	8/12/2008 @ 0617	EDF
Radium-226 (+-Precision*), pCi/l (T)	0.2(+-0.3)	0.2	SM 7500-Ra B	7/30/2008 @ 1305	AN
Radium-228 (+-Precision*), pCi/l (T)	0.5(+-0.7)	0.6	EPA Ra-05	8/4/2008 @ 1603	RG/AN
Total Solids, mg/l	489	10	EPA 160.3	7/25/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808;
NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 03 PT
Client Project ID: Petroglyph Wells
Date Collected: 7/17/08 1400
Date Received: 7/18/08

Lab Work Order: 08-5120
Lab Sample ID: 08-5120-01
Sample Matrix: Groundwater

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 7/18/08
Date Analyzed: 7/18/08 1145
Lab File ID: 12
Method Blank: MB 071808
Dilution Factor: 1
Lab Fraction ID: 08-5120-01C

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	23.0	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	0.382	0.20	mg/L
Nitrate-N		U	0.045	mg/L

Date Prepared: 7/18/08
Date Analyzed: 7/18/08 1451
Lab File ID: 13
Method Blank: MB 071808
Dilution Factor: 10
Lab Fraction ID: 08-5120-01C

Analytes	CAS Number	Result	LQL	Units
Sulfate	7778-80-2	167	5.0	mg/L

Analyst

RAK
Approved

Qualifiers:
B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Sample analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/22/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 03 PT
Client Project ID: Petroglyph Wells
Date Collected: 7/17/08 1400
Date Received: 7/18/08

Lab Work Order 08-5120
Lab Sample ID: 08-5120-01
Sample Matrix: Groundwater

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 7/24/08
Date Analyzed: 7/24/08
Lab File ID: 3
Method Blank: MBLK 07/24/08
Dilution Factor: 1
Lab Fraction ID: 08-5120-01K

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		161	5.0	mg/L CaCO3
Bicarbonate		140	5.0	mg/L CaCO3
Carbonate		21.7	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 7/22/08
Date Analyzed: 7/22/08
Lab File ID: 50
Method Blank: MBLK 7/22/08
Dilution Factor: 1
Lab Fraction ID: 08-5120-01I

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 7/21/08
Date Analyzed: 7/21/08
Lab File ID: 61
Method Blank: MBLK 7/21/07
Dilution Factor: 1
Lab Fraction ID: 08-5120-01D

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	3.9	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 7/18/08
Date Analyzed: 7/18/08 1100
Dilution Factor: 1
Lab Fraction ID: 08-5120-01K

Analytes	CAS Number	Result	LQL	Units
pH		8.86 H	1.00	pH Units

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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/28/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 03 PT
Client Project ID: Petroglyph Wells
Date Collected: 7/17/08 1400
Date Received: 7/18/08

Lab Work Order 08-5120
Lab Sample ID: 08-5120-01
Sample Matrix: Groundwater

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 7/21/08
Date Analyzed: 7/21/08
Lab File ID: 75
Method Blank: MBLK 07/21/08
Dilution Factor: 1
Lab Fraction ID: 08-5120-01J

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 7/24/08
Date Analyzed: 7/24/08
Lab File ID: 3
Method Blank: MBLK 7/24/08
Dilution Factor: 1
Lab Fraction ID: 08-5120-01K

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		479	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 7/23/08
Date Analyzed: 7/23/08
Lab File ID: 3
Method Blank: MBLK 7/23/08
Dilution Factor: 1
Lab Fraction ID: 08-5120-01K

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		12.5	5.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/28/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 03 PT
Client Project ID: Petroglyph Wells
Date Collected: 7/17/08
Date Received: 7/18/08

Lab Work Order 08-5120
Lab Sample ID: 08-5120-01
Sample Matrix: Groundwater

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 7/23/08
Date Analyzed: 7/24/08
Lab File ID: 080724A.B\039SMPL.D
Method Blank: MB-16153
Dilution Factor: 1
Lab Fraction ID: 08-5120-01E

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.0432	0.0100	mg/L
Beryllium	7440-41-7	U	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	5.04	0.400	mg/L
Chromium	7440-47-3	0.00751	0.00220	mg/L
Copper	7440-50-8	U	0.0100	mg/L
Iron	7439-89-6	2.75	0.200	mg/L
Lead	7439-92-1	0.00274	0.00100	mg/L
Magnesium	7439-95-4	0.529	0.0500	mg/L
Manganese	7439-96-5	0.0595	0.00500	mg/L
Molybdenum	7439-98-7	0.00740	0.00500	mg/L
Nickel	7440-02-0	U	0.0100	mg/L
Potassium	7440-09-7	1.23	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	149	0.500	mg/L
Strontium	7440-24-6	0.127	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.0277 B	0.00500	mg/L

Analyst

Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
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H - Sample analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/25/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 03 PT
Client Project ID: Petroglyph Wells
Date Collected: 7/17/08
Date Received: 7/18/08

Lab Work Order 08-5120
Lab Sample ID: 08-5120-01
Sample Matrix: Groundwater

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 7/21/08
Date Analyzed: 7/21/08
Method Blank: MB-16104
Dilution Factor: 1
Lab Fraction ID: 08-5120-01E

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/25/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 03 PT	**Lab Work Order:**	08-5120
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5120-01F
Date Collected:	7/17/2008	**Sample Matrix:**	Groundwater
Date Received:	7/18/2008	**Lab File ID:**	046.D
Date Prepared:	7/23/2008	**Method Blank:**	MB-16141
Date Analyzed:	7/23/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/24/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 03 PT	**Lab Work Order**	08-5120
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5120-01G
Date Collected:	7/17/08	**Sample Matrix:**	Groundwater
Date Received:	7/18/08	**Lab File ID:**	GAS072120
Date Prepared:	7/21/08	**Method Blank:**	GB072108
Date Analyzed:	7/21/08	**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
Ethane	74-84-0	0.0049	0.0016
Ethene	74-85-1	U	0.0024
Methane	74-82-8	0.28	0.00080

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
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H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/22/08

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 03 PT	**Lab Work Order:**	08-5120
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5120-01H
Date Collected:	7/17/2008	**Sample Matrix:**	Groundwater
Date Received:	7/18/2008	**Lab File ID:**	2001020.D
Date Prepared:	7/24/2008	**Method Blank:**	MB6072408
Date Analyzed:	7/24/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	2.13	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
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H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/27/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 03 PT	**Lab Work Order:**	08-5120
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5120-01H
Date Collected:	7/17/2008	**Sample Matrix:**	Groundwater
Date Received:	7/18/2008	**Lab File ID:**	2001020.D
Date Prepared:	7/24/2008	**Method Blank:**	MB6072408
Date Analyzed:	7/24/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	0.790		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	98	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	100	**QC Limits:**	70-130 %REC

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
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S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/27/2008

Tentatively Identified Compound (LSC) summary

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 2001020.D
Acq On : 24 Jul 2008 10:48 pm
Operator : Don Chamot
Sample : 08-5120-01H
Misc : SAMP 524
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

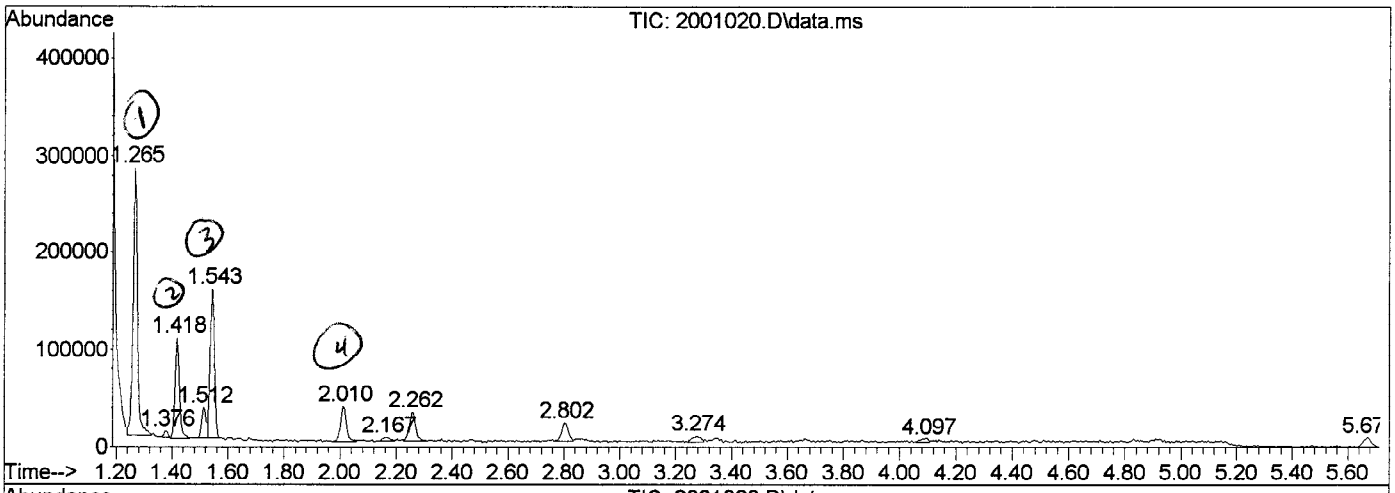
TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
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sobutane	1.418	1.1	ug/l	113589	1	6.105	531056	5.0
utane	1.543	1.5	ug/l	160956	1	6.105	531056	5.0
utane, 2-methyl-	2.010	0.5	ug/l	56094	1	6.105	531056	5.0

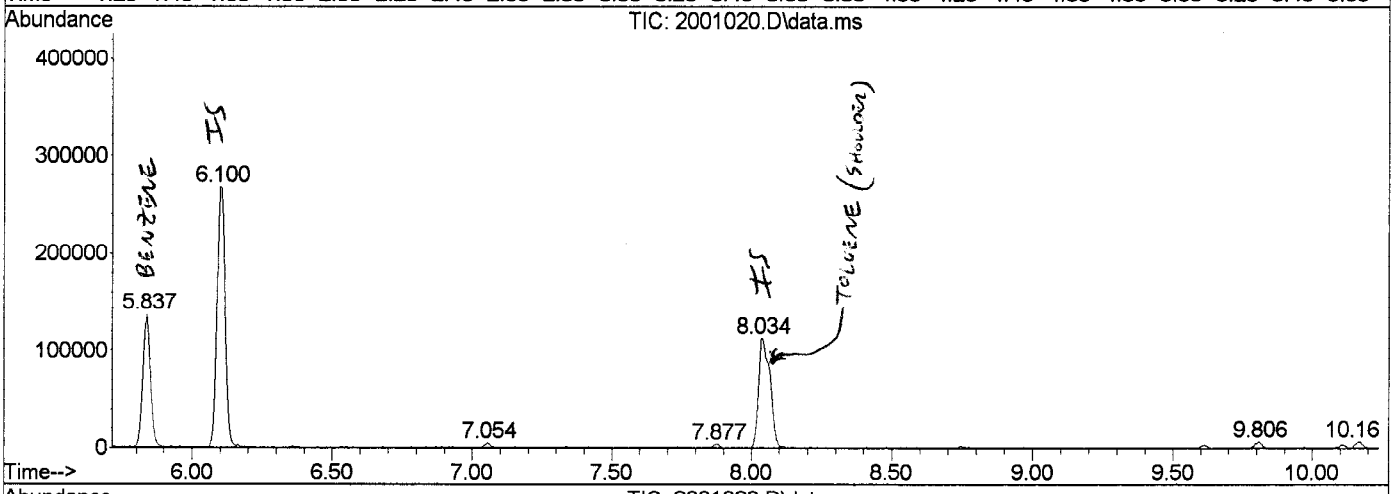
LSC Report - Integrated Chromatogram

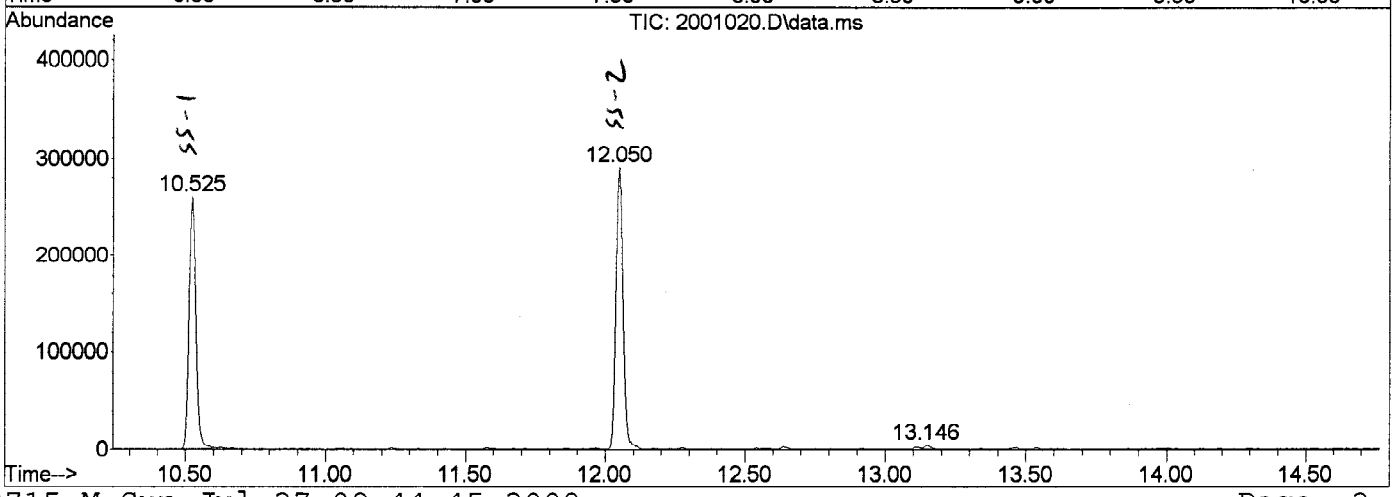
Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 2001020.D
Acq On : 24 Jul 2008 10:48 pm
Operator : Don Chamot
Sample : 08-5120-01H
Misc : SAMP 524
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P







Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 2001020.D
Acq On : 24 Jul 2008 10:48 pm
Operator : Don Chamot
Sample : 08-5120-01H
Misc : SAMP 524
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

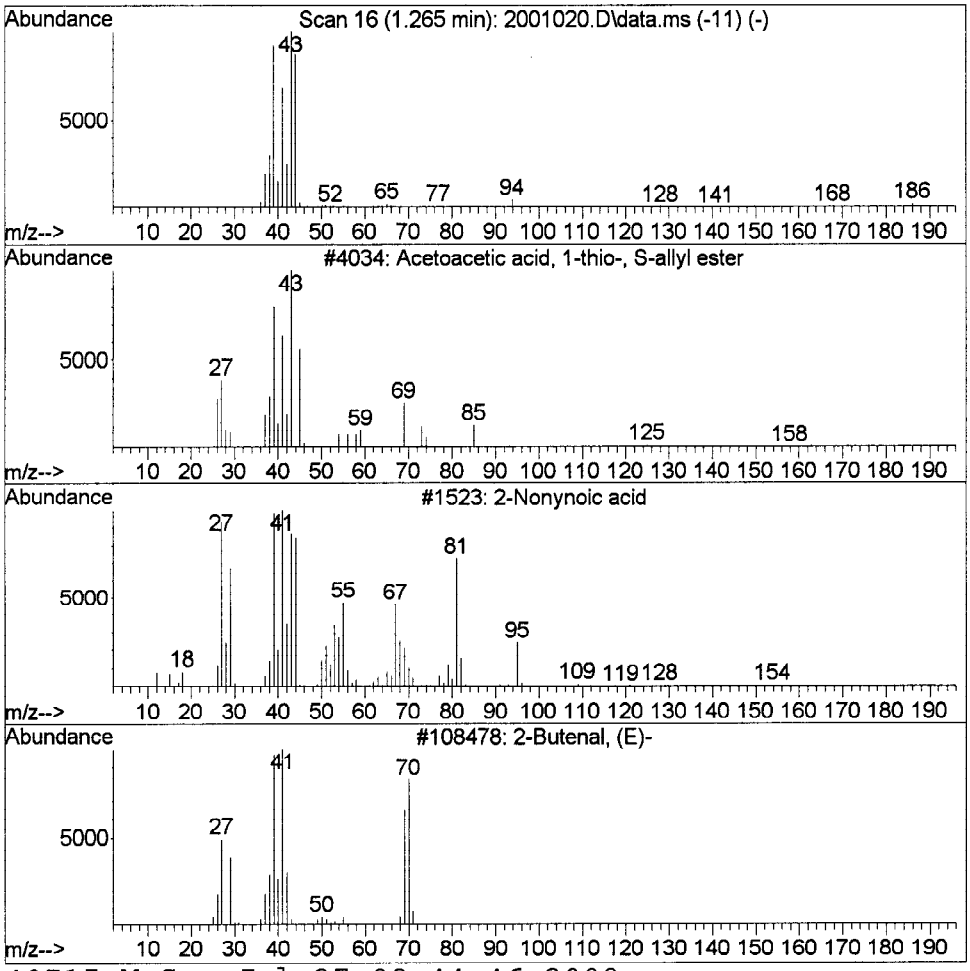
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

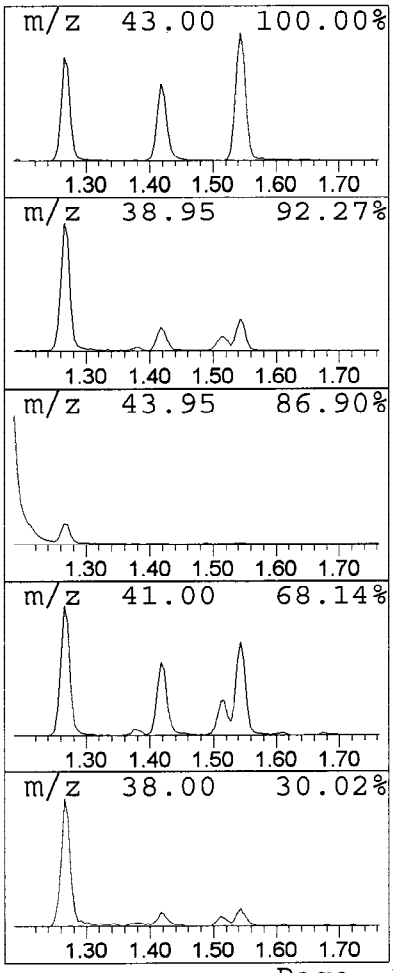
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Peak Number 1 Acetoacetic acid, 1-thio-, ... Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.265	2.80 ug/l	297706	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Acetoacetic acid, 1-thio-, S-all...	158	C7H10O2S	015780-65-1	64
2	2-Nonynoic acid	154	C9H14O2	001846-70-4	42
3	2-Butenal, (E)-	70	C4H6O	000123-73-9	39
4	4H-Pyran-4-one, 2-(chloromethyl)...	160	C6H5ClO3	007559-81-1	39
5	1-Propyne, 3-bromo-	118	C3H3Br	000106-96-7	38





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 2001020.D
Acq On : 24 Jul 2008 10:48 pm
Operator : Don Chamot
Sample : 08-5120-01H
Misc : SAMP 524
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

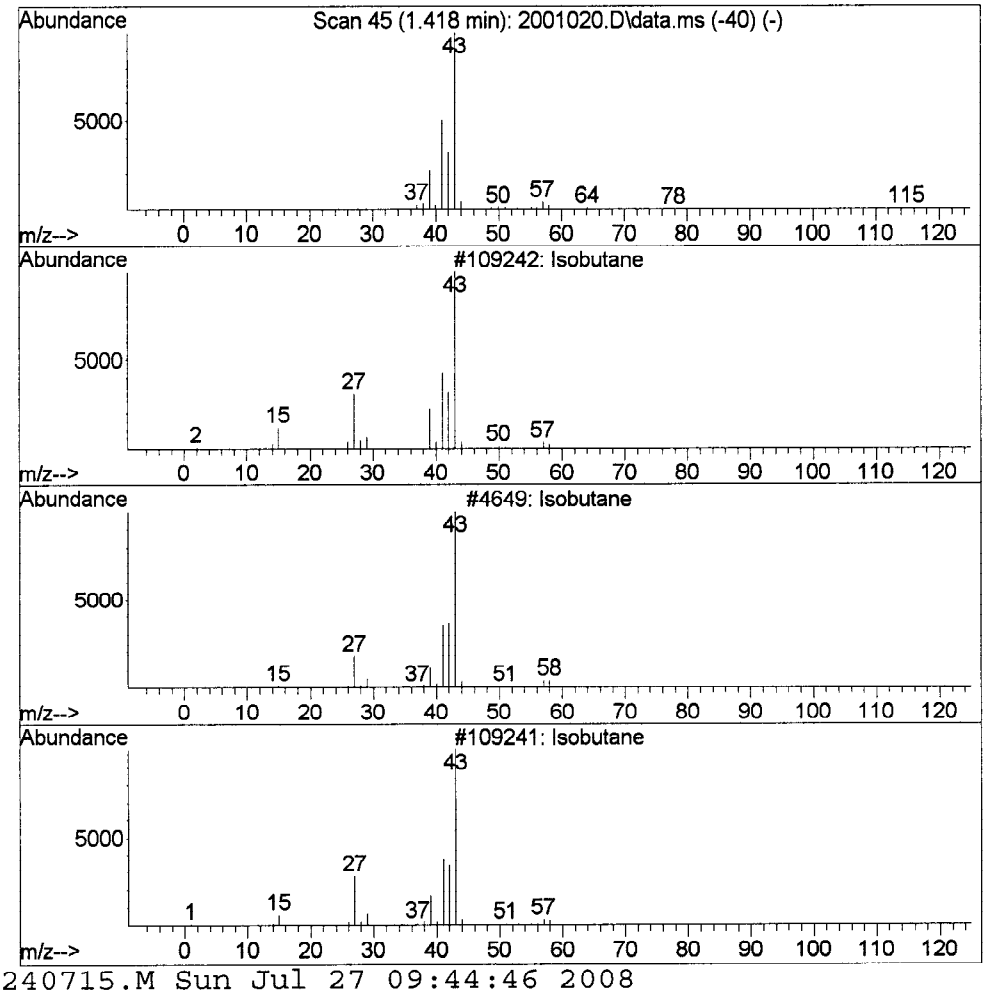
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

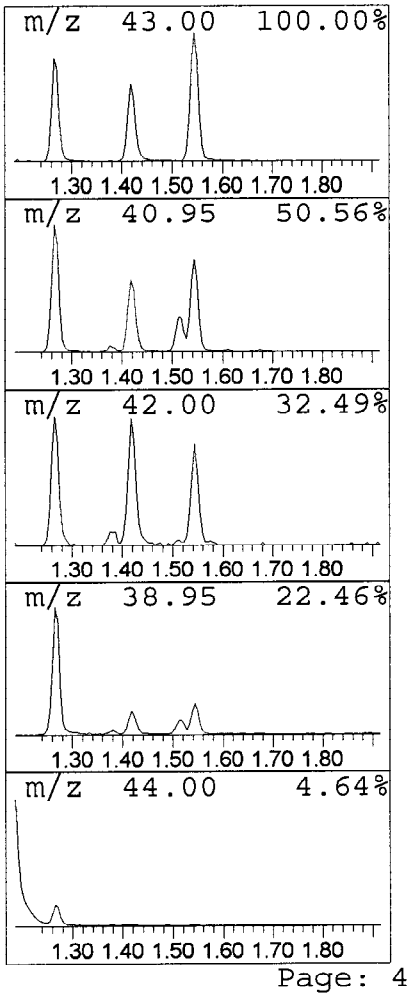
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Peak Number 2 Isobutane Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.418	1.07 ug/l	113589	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Isobutane	58	C4H10	000075-28-5	64
2	Isobutane	58	C4H10	000075-28-5	23
3	Isobutane	58	C4H10	000075-28-5	9
4	Borane, trimethyl-	56	C3H9B	000593-90-8	9
5	1-Propanol, 2-methyl-	74	C4H10O	000078-83-1	9





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 2001020.D
Acq On : 24 Jul 2008 10:48 pm
Operator : Don Chamot
Sample : 08-5120-01H
Misc : SAMP 524
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

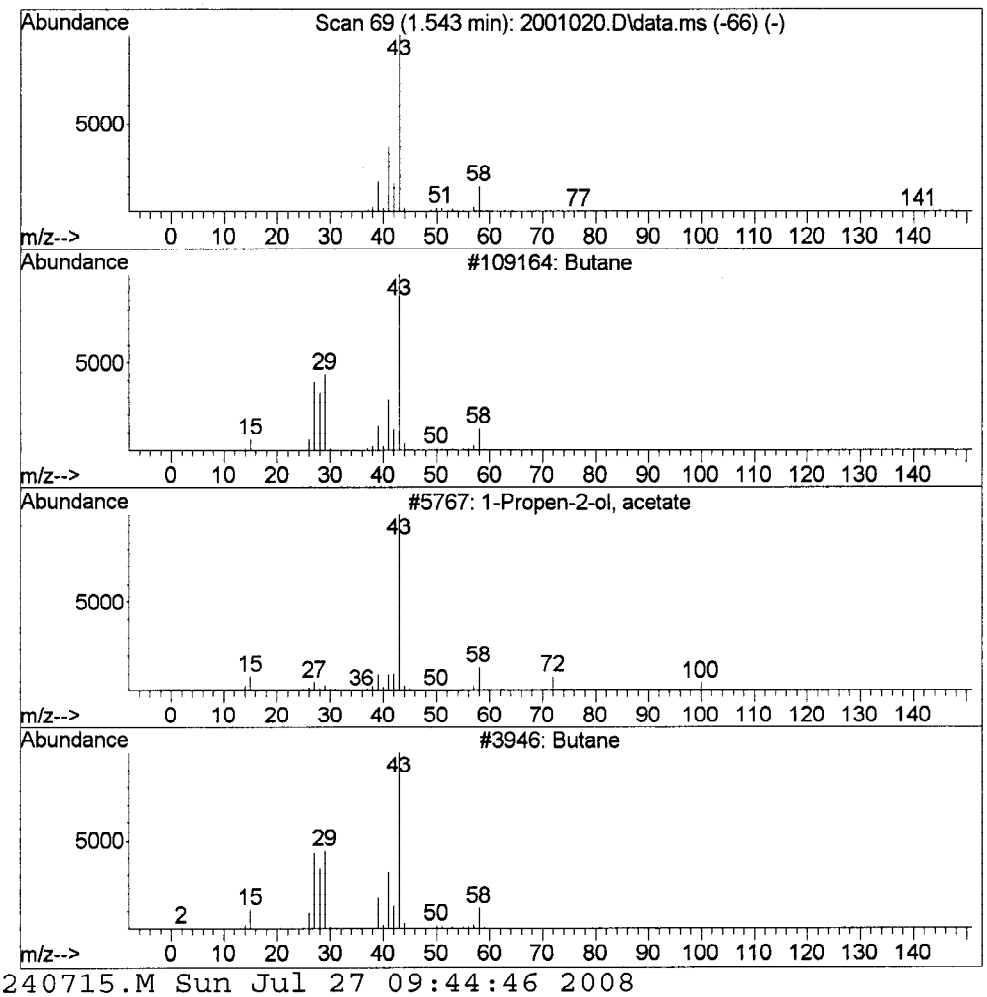
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

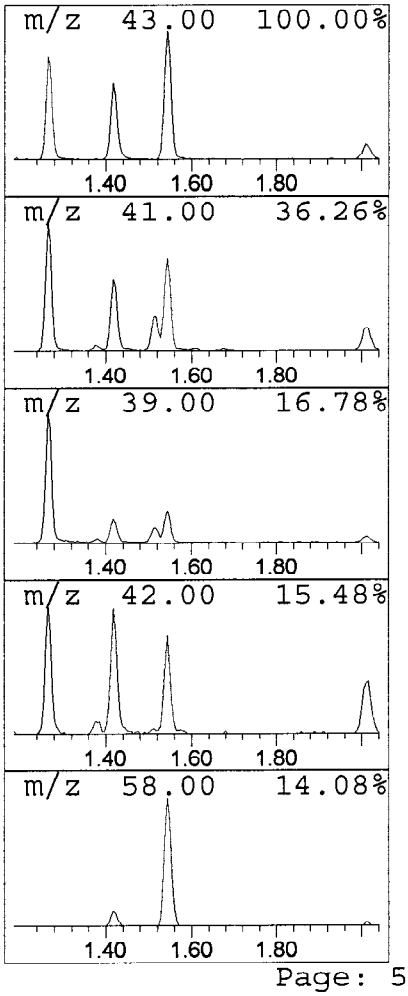
****

Peak Number 3 Butane Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.543	1.52 ug/l	160956	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Butane	58	C4H10	000106-97-8	59
2	1-Propen-2-ol, acetate	100	C5H8O2	000108-22-5	45
3	Butane	58	C4H10	000106-97-8	38
4	2,3-Butanedione, monooxime	101	C4H7NO2	000057-71-6	9
5	Isobutane	58	C4H10	000075-28-5	9





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 2001020.D
Acq On : 24 Jul 2008 10:48 pm
Operator : Don Chamot
Sample : 08-5120-01H
Misc : SAMP 524
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

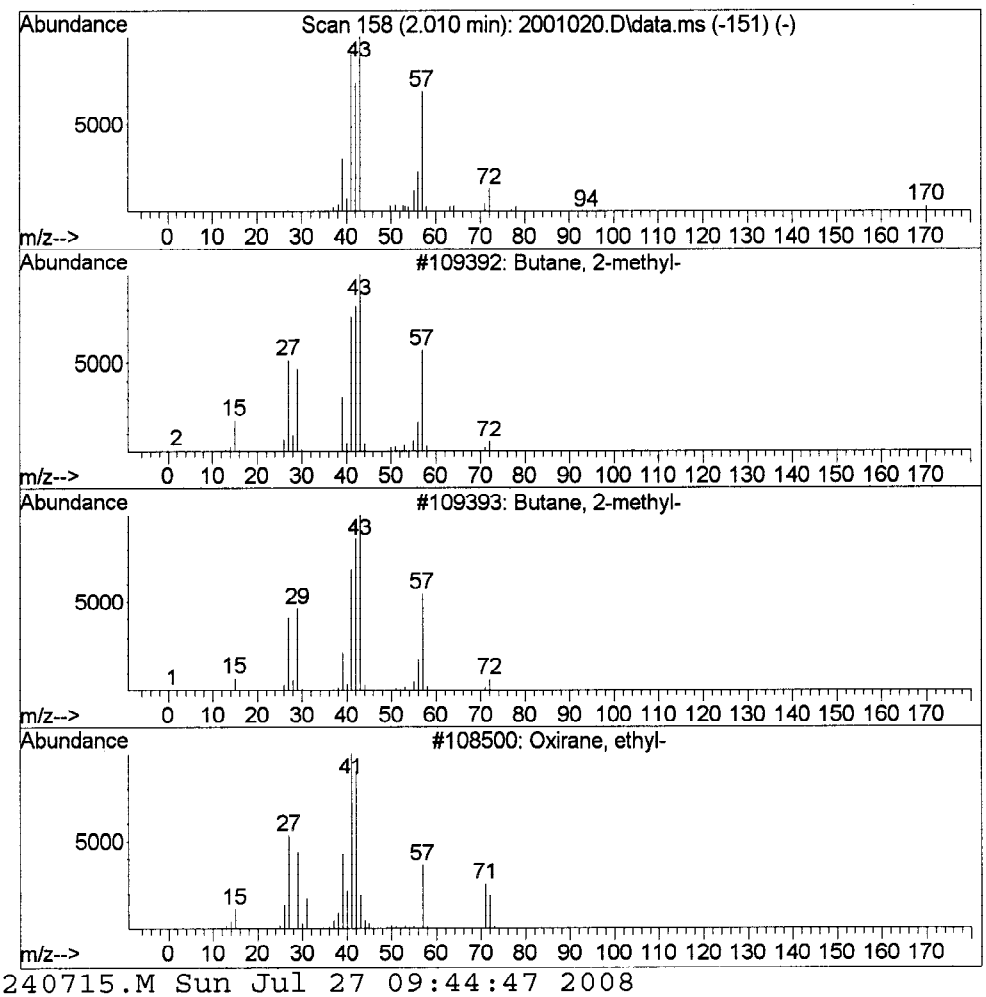
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

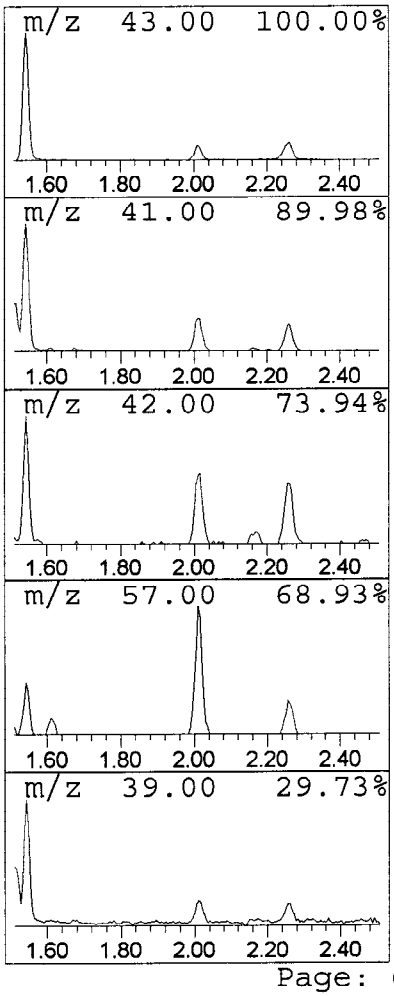
****

Peak Number 4 Butane, 2-methyl- Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.010	0.53 ug/l	56094	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Butane, 2-methyl-	72	C5H12	000078-78-4	72
2	Butane, 2-methyl-	72	C5H12	000078-78-4	72
3	Oxirane, ethyl-	72	C4H8O	000106-88-7	40
4	3-Buten-1-ol	72	C4H8O	000627-27-0	38
5	1,1-Diisobutoxy-butane	202	C12H26O2	1000140-04-0	22





QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: R40735

Sample ID: LCS	SampType: LCS	TestCode: anions_nond	Run ID: IC-2000_080718A	Prep Date: 7/18/2008	Units: mg/L
	Batch ID: R40735	TestNo: E300.0	FileID: 19	Analysis Date: 7/18/2008	SeqNo: 715403

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	20.41	1.0	20	0	102	90	110	0	0		
Nitrite-N	6.558	0.12	6.09	0	108	90	110	0	0		
Bromide	21.11	0.40	20	0	106	90	110	0	0		
Nitrate-N	4.65	0.090	4.518	0	103	90	110	0	0		
Sulfate	31.89	1.0	30	0	106	90	110	0	0		

Sample ID: MB 071808	SampType: MBLK	TestCode: anions_w	Run ID: IC-2000_080718A	Prep Date: 7/18/2008	Units: mg/L
	Batch ID: R40735	TestNo: E300.0	FileID: 5	Analysis Date: 7/18/2008	SeqNo: 715401

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0	0.50									
Nitrite-N	0	0.0040									
Bromide	0	0.050									
Nitrate-N	0	0.010									
Sulfate	0	0.50									

Sample ID: LCS	SampType: LCS	TestCode: anions_w	Run ID: IC-2000_080718A	Prep Date: 7/18/2008	Units: mg/L
	Batch ID: R40735	TestNo: E300.0	FileID: 20	Analysis Date: 7/18/2008	SeqNo: 715402

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	19.65	2.5	20	0	98.2	90	110	0	0		
Nitrite-N	6.305	0.020	6.09	0	104	90	110	0	0		
Bromide	20.47	0.25	20	0	102	90	110	0	0		
Nitrate-N	4.524	0.050	4.518	0	100	90	110	0	0		
Sulfate	30.5	2.5	30	0	102	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *28-Jul-08*

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 07/24/08**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080724A**	Prep Date: **7/24/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40805**	TestNo: **SM2320B**	FileID: **1**	Analysis Date: **7/24/2008**	SeqNo: **716693**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080724A**	Prep Date: **7/24/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40805**	TestNo: **SM2320B**	FileID: **2**	Analysis Date: **7/24/2008**	SeqNo: **716694**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	100.9	5.0	100	0	101	90	110	0	0		

Qualifiers:

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 7/22/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080722B**	Prep Date: **7/22/2008**	Units: **mg/L**
	Batch ID: **R40737**	TestNo: **SM4500-CN**	FileID: **47**	Analysis Date: **7/22/2008**	SeqNo: **715426**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080722B**	Prep Date: **7/22/2008**	Units: **mg/L**
	Batch ID: **R40737**	TestNo: **SM4500-CN**	FileID: **48**	Analysis Date: **7/22/2008**	SeqNo: **715428**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.1028	0.010	0.104	0	98.8	90	110	0	0		

Qualifiers:

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J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID **MBLK 7/21/07**	SampType: **MBLK**	TestCode: **F_W**	Run ID: **F_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40687**	TestNo: **SM 4500-F C**	FileID: **47**	Analysis Date: **7/21/2008**	SeqNo: **714534**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID **LCS**	SampType: **LCS**	TestCode: **F_W**	Run ID: **F_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40687**	TestNo: **SM 4500-F C**	FileID: **48**	Analysis Date: **7/21/2008**	SeqNo: **714535**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	10.03	0.20	10	0	100	95	105	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID **LCS-R40654**	SampType: **LCS**	TestCode: **PH_W**	Run ID: **PH_080718B**	Prep Date: **7/18/2008**	Units: **pH Units**
	Batch ID: **R40654**	TestNo: **SM 4500H+ B**	FileID:	Analysis Date: **7/18/2008**	SeqNo: **713967**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8	1.00	8	0	100	99.3	100.7	0	0		

Qualifiers:

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 07/21/08**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080721B**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40703**	TestNo: **SM 4500-S C/**	FileID: **72**	Analysis Date: **7/21/2008**	SeqNo: **714833**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080721B**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40703**	TestNo: **SM 4500-S C/**	FileID: **73**	Analysis Date: **7/21/2008**	SeqNo: **714834**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.5	0.50	1.7	0	88.2	60	120	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK 7/24/08**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080724A**	Prep Date: **7/24/2008**	Units: **mg/L**
	Batch ID: **R40839**	TestNo: **SM 2540C**	FileID: **47**	Analysis Date: **7/24/2008**	SeqNo: **717111**

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_080724A**	Prep Date: **7/24/2008**	Units: **mg/L**
	Batch ID: **R40839**	TestNo: **SM 2540C**	FileID: **48**	Analysis Date: **7/24/2008**	SeqNo: **717112**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	400	10.0	400	0	100	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 7/23/08**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080723B**	Prep Date: **7/23/2008**	Units: **mg/L**
	Batch ID: **R40787**	TestNo: **SM 2540 D**	FileID: **47**	Analysis Date: **7/23/2008**	SeqNo: **716128**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080723B**	Prep Date: **7/23/2008**	Units: **mg/L**
	Batch ID: **R40787**	TestNo: **SM 2540 D**	FileID: **48**	Analysis Date: **7/23/2008**	SeqNo: **716129**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	288	5.0	300	0	96	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16153

Sample ID: **MB-16153** SampType: **MBLK** TestCode: **200.8_TR** Run ID: **ICPMS_080724A** Prep Date: **7/23/2008** Units: **mg/L**
Batch ID: **16153** TestNo: **E200.8** FileID: **080724A.B\032SMPL.D** Analysis Date: **7/24/2008** SeqNo: **716912**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	U	0.00200									
Arsenic	U	0.00200									
Barium	U	0.0100									
Beryllium	U	0.00100									
Boron	U	0.200									
Cadmium	U	0.000500									
Calcium	U	0.400									
Chromium	U	0.00220									
Copper	U	0.0100									
Iron	U	0.200									
Lead	U	0.00100									
Magnesium	U	0.0500									
Manganese	U	0.00500									
Molybdenum	U	0.00500									
Nickel	U	0.0100									
Potassium	U	0.125									
Selenium	U	0.00200									
Silver	U	0.000200									
Sodium	U	0.500									
Strontium	U	0.0980									
Thallium	U	0.00100									
Zinc	0.016	0.00500									

Sample ID: **LCS-16153** SampType: **LCS** TestCode: **200.8_TR** Run ID: **ICPMS_080724A** Prep Date: **7/23/2008** Units: **mg/L**
Batch ID: **16153** TestNo: **E200.8** FileID: **080724A.B\033SMPL.D** Analysis Date: **7/24/2008** SeqNo: **716913**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.01029	0.00200	0.01	0	103	85	115	0	0		
Arsenic	0.104	0.00200	0.1	0	104	85	115	0	0		
Barium	0.0947	0.0100	0.1	0.001455	94.7	85	115	0	0		
Beryllium	0.01005	0.00100	0.01	0	101	85	115	0	0		

Qualifiers:

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J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16153

Sample ID: **LCS-16153**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080724A**	Prep Date: **7/23/2008**	Units: **mg/L**
	Batch ID: **16153**	TestNo: **E200.8**	FileID: **080724A.B\033SMPL.D**	Analysis Date: **7/24/2008**	SeqNo: **716913**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron	0.9935	0.200	1	0.0122	99.4	85	115	0	0		
Cadmium	0.01018	0.000500	0.01	0	102	85	115	0	0		
Calcium	1.117	0.400	1	0.1493	112	85	115	0	0		
Chromium	0.1041	0.00220	0.1	0.0006625	104	85	115	0	0		
Copper	0.1044	0.0100	0.1	0.00516	104	85	115	0	0		
Iron	1.014	0.200	1	0.03163	101	85	115	0	0		
Lead	0.02038	0.00100	0.02	0.000859	102	85	115	0	0		
Magnesium	1.001	0.0500	1	0	100	85	115	0	0		
Manganese	0.2054	0.00500	0.2	0.0004817	103	85	115	0	0		
Molybdenum	0.097	0.00500	0.1	0	97	85	115	0	0		
Nickel	0.09685	0.0100	0.1	0.0007405	96.9	85	115	0	0		
Potassium	0.9965	0.125	1	0	99.7	85	115	0	0		
Selenium	0.02292	0.00200	0.02	0	115	85	115	0	0		
Silver	0.00986	0.000200	0.01	0.000049	98.6	85	115	0	0		
Sodium	1.084	0.500	1	0.0852	108	85	115	0	0		
Strontium	U	0.0980	0.1	0	96.4	85	115	0	0		
Thallium	0.004973	0.00100	0.005	0	99.5	85	115	0	0		
Zinc	0.2314	0.00500	0.2	0.016	108	85	115	0	0		B

Qualifiers:

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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *25-Jul-08*

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16104

Sample ID: **MB-16104**	SampType: **MBLK**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **16104**	TestNo: **E245.1**	FileID: **72108**	Analysis Date: **7/21/2008**	SeqNo: **714573**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0	0.000100									

Sample ID: **LCS-16104**	SampType: **LCS**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **16104**	TestNo: **E245.1**	FileID: **72108**	Analysis Date: **7/21/2008**	SeqNo: **714574**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00109	0.000100	0.001	0	109	85	115	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *24-Jul-08*

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16141**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16141**	TestNo: **E504.1**	FileID: **040.D**	Analysis Date: **7/23/2008**	SeqNo: **716292**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16141**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16141**	TestNo: **E504.1**	FileID: **041.D**	Analysis Date: **7/23/2008**	SeqNo: **716293**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.283	0.020	0.25	0	113	70	130	0	0		
1,2-Dibromoethane	0.277	0.010	0.25	0	111	70	130	0	0		

Sample ID: **08-5113-04AMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16141**	TestNo: **E504.1**	FileID: **043.D**	Analysis Date: **7/23/2008**	SeqNo: **716295**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.042	0.020	1	0	104	65	135	0	0		
1,2-Dibromoethane	0.985	0.010	1	0	98.5	65	135	0	0		

Qualifiers:

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S - Spike Recovery outside acceptance limits
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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *22-Jul-08*

Work Order: 08-5120

Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **GB072108**	SampType: **MBLK**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072104**	Analysis Date: **7/21/08**	SeqNo: **714853**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS072108**	SampType: **LCS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072105**	Analysis Date: **7/21/08**	SeqNo: **714854**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.122	0.016	0.9548	0	118	70	130	0	0		
Ethene	1.262	0.024	0.8913	0	142	70	140	0	0		S
Methane	0.5747	0.0080	0.5094	0	113	70	130	0	0		

Sample ID: **LCSD072108**	SampType: **LCSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072106**	Analysis Date: **7/21/08**	SeqNo: **714855**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.129	0.016	0.9548	0	118	70	130	1.122	0.659	30	
Ethene	1.27	0.024	0.8913	0	142	70	140	1.262	0.627	30	S
Methane	0.5794	0.0080	0.5094	0	114	70	130	0.5747	0.825	30	

Sample ID: **08-5116-01BMS**	SampType: **MS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072109**	Analysis Date: **7/21/08**	SeqNo: **714850**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.01	0.016	0.9548	0	106	70	130	0	0		
Ethene	1.128	0.024	0.8913	0	127	70	140	0	0		
Methane	0.5168	0.0080	0.5094	0	101	70	130	0	0		

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X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **08-5116-01BMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072110**	Analysis Date: **7/21/08**	SeqNo: **714851**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	0.993	0.016	0.9548	0	104	70	130	1.01	1.68	30	
Ethene	1.107	0.024	0.8913	0	124	70	140	1.128	1.88	30	
Methane	0.5074	0.0080	0.5094	0	99.6	70	130	0.5168	1.84	30	

Qualifiers:

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H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *27-Jul-08*

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6072408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/24/2008**	SeqNo: **717418**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6072408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/24/2008**	SeqNo: **717418**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

Qualifiers:

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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6072408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/24/2008**	SeqNo: **717418**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	5.03	0	5	0	101	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.04	0	5	0	101	70	130	0	0		

Sample ID: **LCS6072408**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/24/2008**	SeqNo: **717419**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.04	0.50	5	0	101	70	130	0	0		
Bromobenzene	4.96	0.50	5	0	99.2	70	130	0	0		
Bromochloromethane	4.81	0.50	5	0	96.2	70	130	0	0		
Bromodichloromethane	5.18	0.50	5	0	104	70	130	0	0		
Bromoform	4.48	0.50	5	0	89.6	70	130	0	0		
Bromomethane	5.33	0.50	5	0	107	70	130	0	0		
n-Butylbenzene	4.83	0.50	5	0	96.6	70	130	0	0		
sec-Butylbenzene	4.93	0.50	5	0	98.6	70	130	0	0		
t-Butylbenzene	5.04	0.50	5	0	101	70	130	0	0		
Carbon tetrachloride	5.31	0.50	5	0	106	70	130	0	0		
Chlorobenzene	4.98	0.50	5	0	99.6	70	130	0	0		
Chloroethane	4.68	0.50	5	0	93.6	70	130	0	0		
Chloroform	5.09	0.50	5	0	102	70	130	0	0		
Chloromethane	4.58	0.50	5	0	91.6	70	130	0	0		
2-Chlorotoluene	5.02	0.50	5	0	100	70	130	0	0		
4-Chlorotoluene	4.81	0.50	5	0	96.2	70	130	0	0		
Dibromochloromethane	4.67	0.50	5	0	93.4	70	130	0	0		
Dibromomethane	5.08	0.50	5	0	102	70	130	0	0		
1,2-Dichlorobenzene	4.84	0.50	5	0	96.8	70	130	0	0		
1,3-Dichlorobenzene	4.8	0.50	5	0	96	70	130	0	0		
1,4-Dichlorobenzene	4.69	0.50	5	0	93.8	70	130	0	0		
Dichlorodifluoromethane	5.71	0.50	5	0	114	70	130	0	0		
1,1-Dichloroethane	5.22	0.50	5	0	104	70	130	0	0		
1,2-Dichloroethane	4.86	0.50	5	0	97.2	70	130	0	0		

Qualifiers:

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B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS6072408**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/24/2008**	SeqNo: **717419**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	5.29	0.50	5	0	106	70	130	0	0		
cis-1,2-Dichloroethene	5.27	0.50	5	0	105	70	130	0	0		
trans-1,2-Dichloroethene	5.18	0.50	5	0	104	70	130	0	0		
1,2-Dichloropropane	5.32	0.50	5	0	106	70	130	0	0		
1,3-Dichloropropane	4.98	0.50	5	0	99.6	70	130	0	0		
2,2-Dichloropropane	4.51	0.50	5	0	90.2	70	130	0	0		
1,1-Dichloropropene	5.08	0.50	5	0	102	70	130	0	0		
cis-1,3-Dichloropropene	4.9	0.50	5	0	98	70	130	0	0		
trans-1,3-Dichloropropene	4.57	0.50	5	0	91.4	70	130	0	0		
Ethylbenzene	5.09	0.50	5	0	102	70	130	0	0		
Hexachlorobutadiene	4.89	0.50	5	0	97.8	70	130	0	0		
Isopropylbenzene	4.51	0.50	5	0	90.2	70	130	0	0		
p-Isopropyltoluene	4.82	0.50	5	0	96.4	70	130	0	0		
Methylene chloride	5.25	0.50	5	0	105	70	130	0	0		
Naphthalene	4.68	0.50	5	0	93.6	70	130	0	0		
n-Propylbenzene	4.95	0.50	5	0	99	70	130	0	0		
Styrene	5.08	0.50	5	0	102	70	130	0	0		
1,1,1,2-Tetrachloroethane	5.01	0.50	5	0	100	70	130	0	0		
1,1,2,2-Tetrachloroethane	4.91	0.50	5	0	98.2	70	130	0	0		
Tetrachloroethene	5	0.50	5	0	100	70	130	0	0		
Toluene	5.08	0.50	5	0	102	70	130	0	0		
1,2,3-Trichlorobenzene	4.83	0.50	5	0	96.6	70	130	0	0		
1,2,4-Trichlorobenzene	4.83	0.50	5	0	96.6	70	130	0	0		
1,1,1-Trichloroethane	5.34	0.50	5	0	107	70	130	0	0		
1,1,2-Trichloroethane	5.22	0.50	5	0	104	70	130	0	0		
Trichloroethene	5.19	0.50	5	0	104	70	130	0	0		
Trichlorofluoromethane	4.73	0.50	5	0	94.6	70	130	0	0		
1,2,3-Trichloropropane	4.78	0.50	5	0	95.6	70	130	0	0		
1,2,4-Trimethylbenzene	5.12	0.50	5	0	102	70	130	0	0		
1,3,5-Trimethylbenzene	5	0.50	5	0	100	70	130	0	0		
Vinyl chloride	5.66	0.50	5	0	113	70	130	0	0		

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X - See case narrative

Work Order: 08-5120
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS6072408**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/24/2008**	SeqNo: **717419**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	9.88	0.50	10	0	98.8	70	130	0	0		
o-Xylene	4.85	0.50	5	0	97	70	130	0	0		
1,3-Dichloropropene	9.47	0.50	10	0	94.7	70	130	0	0		
Xylenes, Total	14.73	0.50	15	0	98.2	70	130	0	0		
Total THM (Summation of above)	19.42	0.50	20	0	97.1	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	4.9	0	5	0	98	70	130	0	0		
Surr: 4-Bromofluorobenzene	4.98	0	5	0	99.6	70	130	0	0		

Qualifiers:

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical Laboratory

August 14, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-5120
Client Project ID: Petroglyph Wells

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

001

WORK ORDER Summary Evergreen Analytical, Inc. 08-5221

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

7/31/2008 10:28:58 AM

Client Project ID:

QC Level: LEVEL I+

Comments: EDD in Pinery

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-5221-01A	Inj 04 PT	Water	7/22/08 0000	7/23/08	RAD226/228	Radium 226/228	☐	☐	8/06/08	1/18/09
08-5221-01B	Inj 04 PT	Water	7/22/08 0000	7/23/08	ALBETA	Gross Alpha-Beta	☐	☐	8/06/08	1/18/09
08-5221-01B	Inj 04 PT	Water	7/22/08 0000	7/23/08	TS_SUB	Total Solids for Gross A B	☐	☐	8/06/08	7/29/08
08-5221-01C	Inj 04 PT	Water	7/22/08 0000	7/23/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	8/06/08	7/24/08
08-5221-01D	Inj 04 PT	Water	7/22/08 0000	7/23/08	F_W	Fluoride	☐	☐	8/06/08	8/19/08
08-5221-01E	Inj 04 PT	Water	7/22/08 0000	7/23/08	200.8_TR *	200.8: Total Metals	☐	☐	8/06/08	1/18/09
08-5221-01E	Inj 04 PT	Water	7/22/08 0000	7/23/08	245.1_WT *	245.1: Mercury, Total Water	☐	☐	8/06/08	8/19/08
08-5221-01F	Inj 04 PT	Water	7/22/08 0000	7/23/08	504 *	504: Standard List	☐	☐	8/06/08	8/05/08
08-5221-01G	Inj 04 PT	Water	7/22/08 0000	7/23/08	MEEP_W *	RSK175M: MEE	☐	☐	8/06/08	8/05/08
08-5221-01H	Inj 04 PT	Water	7/22/08 0000	7/23/08	524 *	524.2: Standard List	☐	☐	8/06/08	8/05/08
08-5221-01H	Inj 04 PT	Water	7/22/08 0000	7/23/08	VOATICS	VOA TICS (Largest 10)	☐	☐	8/06/08	8/05/08
08-5221-01I	Inj 04 PT	Water	7/22/08 0000	7/23/08	CN_TW	Total Cyanide	☐	☐	8/06/08	8/05/08
08-5221-01J	Inj 04 PT	Water	7/22/08 0000	7/23/08	SULF_W	Total Sulfide	☐	☐	8/06/08	7/29/08
08-5221-01K	Inj 04 PT	Water	7/22/08 0000	7/23/08	ALK_WGRP *	Alkalinity	☐	☐	8/06/08	8/05/08
08-5221-01K	Inj 04 PT	Water	7/22/08 0000	7/23/08	PH_W	Discharge Water pH	☐	☐	8/06/08	7/22/08
08-5221-01K	Inj 04 PT	Water	7/22/08 0000	7/23/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	8/06/08	7/29/08
08-5221-01K	Inj 04 PT	Water	7/22/08 0000	7/23/08	TSS	Total Suspended Solids (TSS)	☐	☐	8/06/08	7/29/08

Definitions: * - Test Code has a Select List

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CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Evergreen Analytical Laboratory Inc.

Page 1 of 1

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City LaVeta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5570 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☑ PDF ☑ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City LaVeta State CO Zip 81055
Tel # 719 742 5570 Fax # 719 742 5571
Project ID#
P.O. Quote
Sampler

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.

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)	Soil / Solid / Air / Gas	Oil / Sludge / Wipe	Radium 226/228	Gross Alpha - Beta	300.0 DW Anions by IC	Fluoride	200.8 Drinking Water II Recycled	Total Solids SM 2540 C	504.1 EDB/DBCP	RSKSOP-175 M	VOA TICS	Total Cyanide	Total Sulfide	TDS, TSS, pH	For Laboratory Use Only
Inj 04 PT	7/22/08						4	1	1	1	1	1	2	3	3	1	1	1	01
																			CN pl 7/12
																			metals pl 7/12
Does this analysis involve property transfer? ☐ Yes or ☐ No							A	B	C	D	E	F	G	H	I	J	K		Sample Fraction

W.O. # 08-5221
B.O.F. # 23779
C/S (O) 134 IWS
C/S (I) 194P IWS
Temp. °C 0.2 / Ice
Seals Present Y (N) / NA
Samples Pres (Y) / N / NA
Headspace Y (N) / NA
By MO /

Instructions:

** **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
Michael Bowers	7/22/08 18:00						7/23/8

Evergreen Analytical, Inc. **Date:** *25-Aug-08*

Lab Order: 08-5221
Client Project ID

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were not present.
The temperature of the sample(s) upon arrival was 0.2 °C.
Sample(s) were received in good condition and in the proper container.
The pH sample was received out of holding time.
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 (QA)

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

CLIENT SERVICES

The Alkalinity group was not requested on the COC, but was included per the quote and bottle order. There are no other anomalies to report. PM

GENERAL CHEMISTRY

The flagged Fluoride result only applies to drinking waters that exceed the MCL of 4.0 mg/L. JKD
The pH required analysis out of holding time (H). There are other no anomalies to report. BP/CMS

METALS ANALYSIS

There are no anomalies to report. WKH

GAS CHROMATOGRAPHY

Method RSK175M: Laboratory control spike and laboratory control spike duplicate (LCS/LCSD) recoveries for Ethene are 3 % above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS
Method 504.1: There are no anomalies to report. AE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: A LCSD analysis was performed but not reported as it was beyond the allowed

Evergreen Analytical, Inc. **Date:** *25-Aug-08*

Lab Order: 08-5221
Client Project ID

CASE NARRATIVE

instrument tune time due to an instrument error. Only one LCS is required by the 524 method. There are no other anomalies to report. DC

005

AUG 23 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 7954

WorkOrder: 08-5221

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

23-Jul-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests						
				ALPHABETA	RAD226/228	TS				
					(4)					
08-5221-01A	Water	7/22/2008	1LPHNO3		1					
08-5221-01B	Water	7/22/2008	1LPHNO3	1		1				

Comments:

		Date/Time	2:40 PM		Date/Time
Relinquished by:	[signature]	7-24-08	**Received by:**	Diane Tipton	7-24-08 1440
Relinquished by:			**Received by:**		

AUG 23 2008

006

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 21, 2008
HRI PROJECT	009-93
HRI SERIES NO	G445/08
DATE REC'D.	7/24/2008
CUST. P.O.#	7954

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G445/08-1

SAMPLE IDENTIFICATION: 08-5221-01A, B - sampled on 07/22/2008

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	0.6(+-1.8)	1.7	SM 7110 B	8/19/2008 @ 0616	EDF
Gross Beta (+-Precision*), pCi/l (T)	1.6(+-1.5)	1.4	SM 7110 B	8/19/2008 @ 0616	EDF
Radium-226 (+-Precision*), pCi/l (T)	0.2(+-0.3)	0.1	SM 7500-Ra B	8/6/2008 @ 0945	AN
Radium-228 (+-Precision*), pCi/l (T)	1.0(+-0.7)	0.6	EPA Ra-05	8/13/2008 @ 1254	AN
Total Solids, mg/l	540	10	EPA 160.3	8/3/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808;
NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

By: _____
Robert Rostad
Laboratory Manager

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 04 PT
Client Project ID:
Date Collected: 7/22/08 0000
Date Received: 7/23/08

Lab Work Order: 08-5221
Lab Sample ID: 08-5221-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 7/23/08 **Lab File ID:** 8 **Dilution Factor:** 1
Date Analyzed: 7/23/08 1126 **Method Blank:** MB 072308 **Lab Fraction ID:** 08-5221-01C

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	28.9	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	0.364	0.20	mg/L
Nitrate-N		U	0.045	mg/L

Date Prepared: 7/23/08 **Lab File ID:** 9 **Dilution Factor:** 10
Date Analyzed: 7/23/08 1248 **Method Blank:** MB 072308 **Lab Fraction ID:** 08-5221-01C

Analytes	CAS Number	Result	LQL	Units
Sulfate	7778-80-2	280	5.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/24/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 04 PT
Client Project ID:
Date Collected: 7/22/08 0000
Date Received: 7/23/08

Lab Work Order 08-5221
Lab Sample ID: 08-5221-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 7/24/08 **Lab File ID:** 13 **Dilution Factor:** 1
Date Analyzed: 7/24/08 **Method Blank:** MBLK 07/24/08 **Lab Fraction ID:** 08-5221-01K

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		60.1	5.0	mg/L CaCO3
Bicarbonate		48.4	5.0	mg/L CaCO3
Carbonate		11.8	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 7/28/08 **Lab File ID:** 49 **Dilution Factor:** 1
Date Analyzed: 7/28/08 **Method Blank:** MBLK 7/28/08 **Lab Fraction ID:** 08-5221-01I

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		0.022	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 7/24/08 **Lab File ID:** 13 **Dilution Factor:** 1
Date Analyzed: 7/24/08 **Method Blank:** MBLK 07/24/08 **Lab Fraction ID:** 08-5221-01D

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	4.2 *	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 7/23/08 **Dilution Factor:** 1
Date Analyzed: 7/23/08 1110 **Lab Fraction ID:** 08-5221-01K

Analytes	CAS Number	Result	LQL	Units
pH		9.18 H	1.00	pH Units

Analyst

Approved

Qualifiers:
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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
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NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 7/28/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 04 PT
Client Project ID:
Date Collected: 7/22/08 0000
Date Received: 7/23/08

Lab Work Order 08-5221
Lab Sample ID: 08-5221-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 7/23/08
Date Analyzed: 7/23/08
Lab File ID: 64
Method Blank: MBLK 07/23/08
Dilution Factor: 1
Lab Fraction ID: 08-5221-01J

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 7/24/08
Date Analyzed: 7/24/08
Lab File ID: 17
Method Blank: MBLK 7/24/08
Dilution Factor: 1
Lab Fraction ID: 08-5221-01K

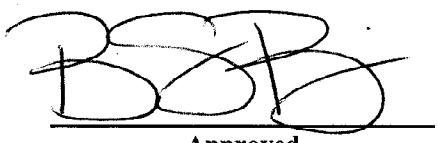
Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		546	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 7/25/08
Date Analyzed: 7/25/08
Lab File ID: 5
Method Blank: MBLK 07/25/08
Dilution Factor: 1
Lab Fraction ID: 08-5221-01K

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		6.50	5.0	mg/L



Analyst Approved

Qualifiers:
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Definitions:
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LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 7/28/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 04 PT
Client Project ID:
Date Collected: 7/22/08
Date Received: 7/23/08

Lab Work Order 08-5221
Lab Sample ID: 08-5221-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 7/28/08
Date Analyzed: 7/30/08
Lab File ID: 080730A.B\078SMPL.D
Method Blank: MB-16193
Dilution Factor: 1
Lab Fraction ID: 08-5221-01E

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.0192	0.0100	mg/L
Beryllium	7440-41-7	U	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	8.59	0.400	mg/L
Chromium	7440-47-3	U	0.00220	mg/L
Copper	7440-50-8	U	0.0100	mg/L
Iron	7439-89-6	0.381	0.200	mg/L
Lead	7439-92-1	U	0.00100	mg/L
Magnesium	7439-95-4	0.118	0.0500	mg/L
Manganese	7439-96-5	0.0142	0.00500	mg/L
Molybdenum	7439-98-7	0.0103	0.00500	mg/L
Nickel	7440-02-0	U	0.0100	mg/L
Potassium	7440-09-7	0.402	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	168	0.500	mg/L
Strontium	7440-24-6	0.206	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.0188	0.00500	mg/L

Analyst

Approved

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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
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Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 8/1/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 04 PT
Client Project ID:
Date Collected: 7/22/08
Date Received: 7/23/08

Lab Work Order 08-5221
Lab Sample ID: 08-5221-01
Sample Matrix: Water

MERCURY, TOTAL

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 7/29/08
Date Analyzed: 7/29/08
Lab File ID: 72908
Method Blank: MB-16196
Dilution Factor: 1
Lab Fraction ID: 08-5221-01E

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.000100	mg/L

Analyst **Approved**

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H - Sample analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/1/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 04 PT	**Lab Work Order:**	08-5221
Client Project ID:		**Lab Sample ID:**	08-5221-01F
Date Collected:	7/22/2008	**Sample Matrix:**	Water
Date Received:	7/23/2008	**Lab File ID:**	051.D
Date Prepared:	7/23/2008	**Method Blank:**	MB-16141
Date Analyzed:	7/23/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
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E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/24/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 04 PT	**Lab Work Order**	08-5221
Client Project ID:		**Lab Sample ID:**	08-5221-01G
Date Collected:	7/22/08	**Sample Matrix:**	Water
Date Received:	7/23/08	**Lab File ID:**	GAS072309
Date Prepared:	7/23/08	**Method Blank:**	GB072308
Date Analyzed:	7/23/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	10.00

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

Analytes	CAS Number	Result	LQL
Methane	74-82-8	4.5	0.0080

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
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E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/23/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 04 PT	**Lab Work Order**	08-5221
Client Project ID:		**Lab Sample ID:**	08-5221-01G
Date Collected:	7/22/08	**Sample Matrix:**	Water
Date Received:	7/23/08	**Lab File ID:**	GAS072308
Date Prepared:	7/23/08	**Method Blank:**	GB072308
Date Analyzed:	7/23/08	**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
Ethane	74-84-0	0.0023	0.0016
Ethene	74-85-1	U	0.0024

Analyst **Approved**

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S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/23/08

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 04 PT	**Lab Work Order:**	08-5221
Client Project ID:		**Lab Sample ID:**	08-5221-01H
Date Collected:	7/22/2008	**Sample Matrix:**	Water
Date Received:	7/23/2008	**Lab File ID:**	0801008.D
Date Prepared:	7/24/2008	**Method Blank:**	MB6072408
Date Analyzed:	7/24/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst **Approved**

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* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/27/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 04 PT	**Lab Work Order:**	08-5221
Client Project ID:		**Lab Sample ID:**	08-5221-01H
Date Collected:	7/22/2008	**Sample Matrix:**	Water
Date Received:	7/23/2008	**Lab File ID:**	0801008.D
Date Prepared:	7/24/2008	**Method Blank:**	MB6072408
Date Analyzed:	7/24/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	U		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	107	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	103	**QC Limits:**	70-130 %REC

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

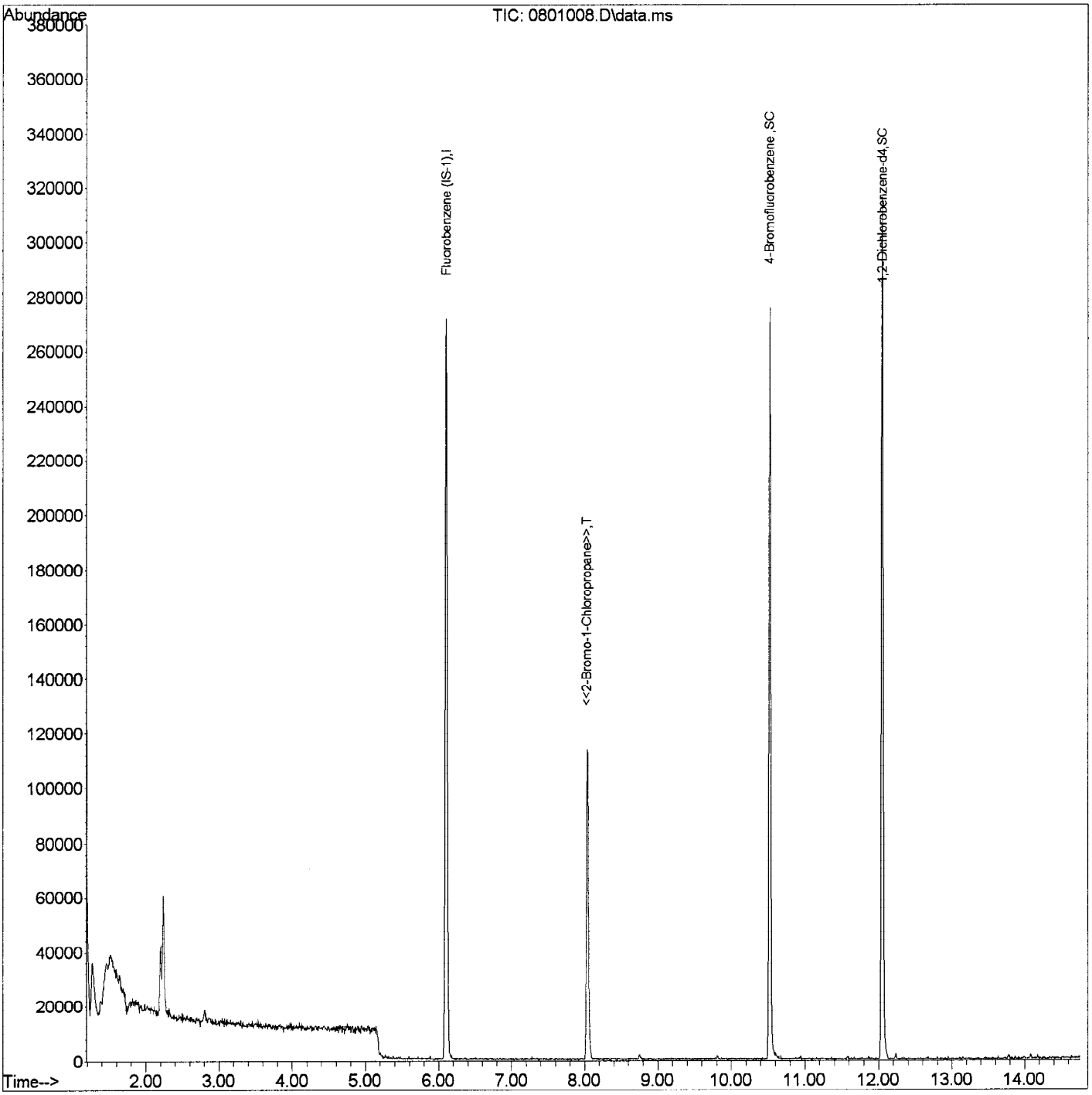
Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 7/27/2008

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 0801008.D
Acq On : 24 Jul 2008 3:35 pm
Operator : Don Chamot
Sample : 08-5221-01H
Misc : SAMP 524
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 25 06:39:33 2008
Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1
QLast Update : Wed Jul 16 07:44:07 2008
Response via : Initial Calibration



7/27/08

Tentatively Identified Compound (LSC) summary

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 0801008.D
Acq On : 24 Jul 2008 3:35 pm
Operator : Don Chamot
Sample : 08-5221-01H
Misc : SAMP 524
ALS Vial : 8 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
ethyl pyrrole-...	1.265	0.5	ug/l	55518	1	6.105	526353	5.0
cetone	2.241	0.7	ug/l	70091	1	6.105	526353	5.0

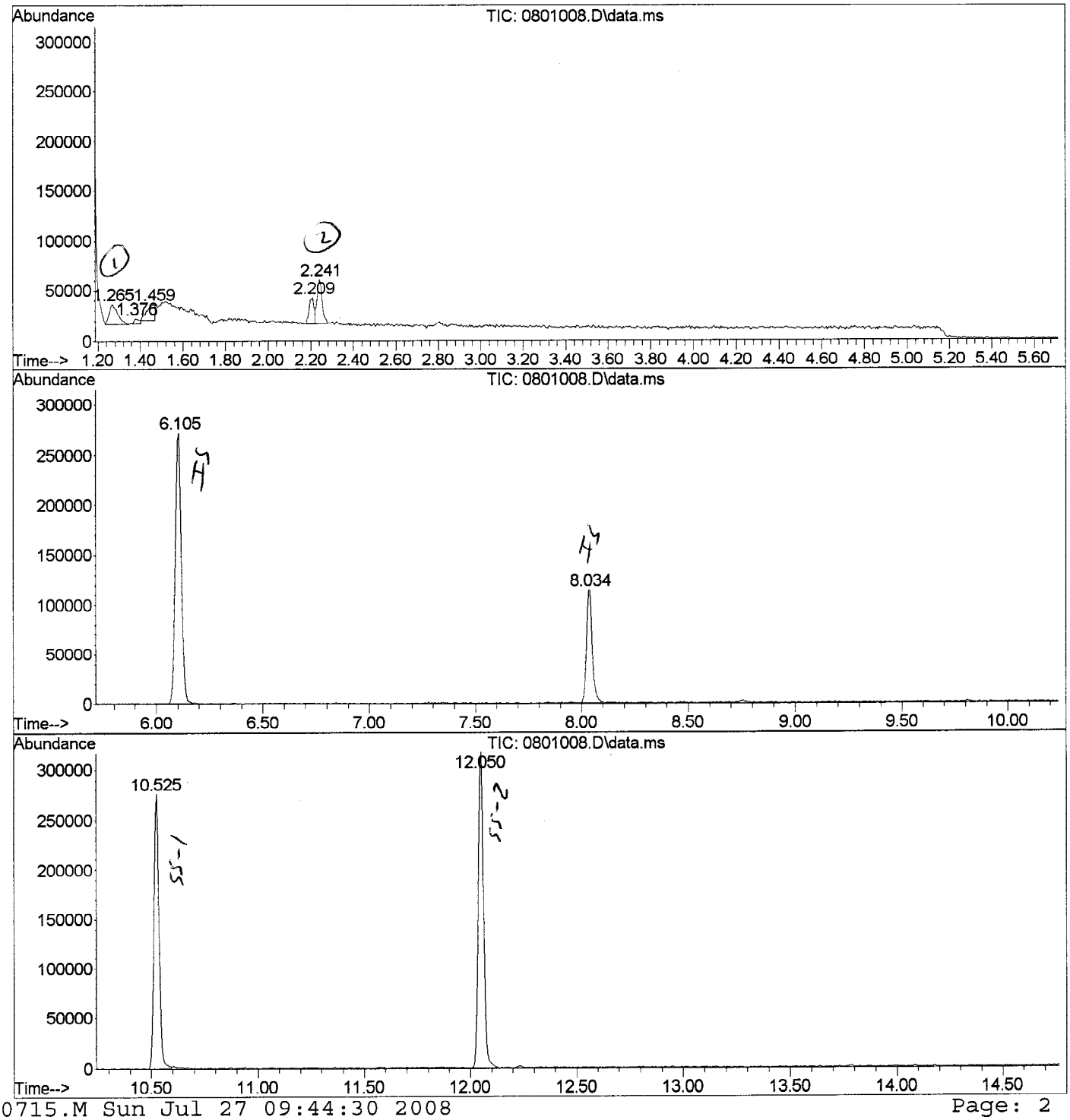
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LSC Report - Integrated Chromatogram

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 0801008.D
Acq On : 24 Jul 2008 3:35 pm
Operator : Don Chamot
Sample : 08-5221-01H
Misc : SAMP 524
ALS Vial : 8 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 0801008.D
Acq On : 24 Jul 2008 3:35 pm
Operator : Don Chamot
Sample : 08-5221-01H
Misc : SAMP 524
ALS Vial : 8 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

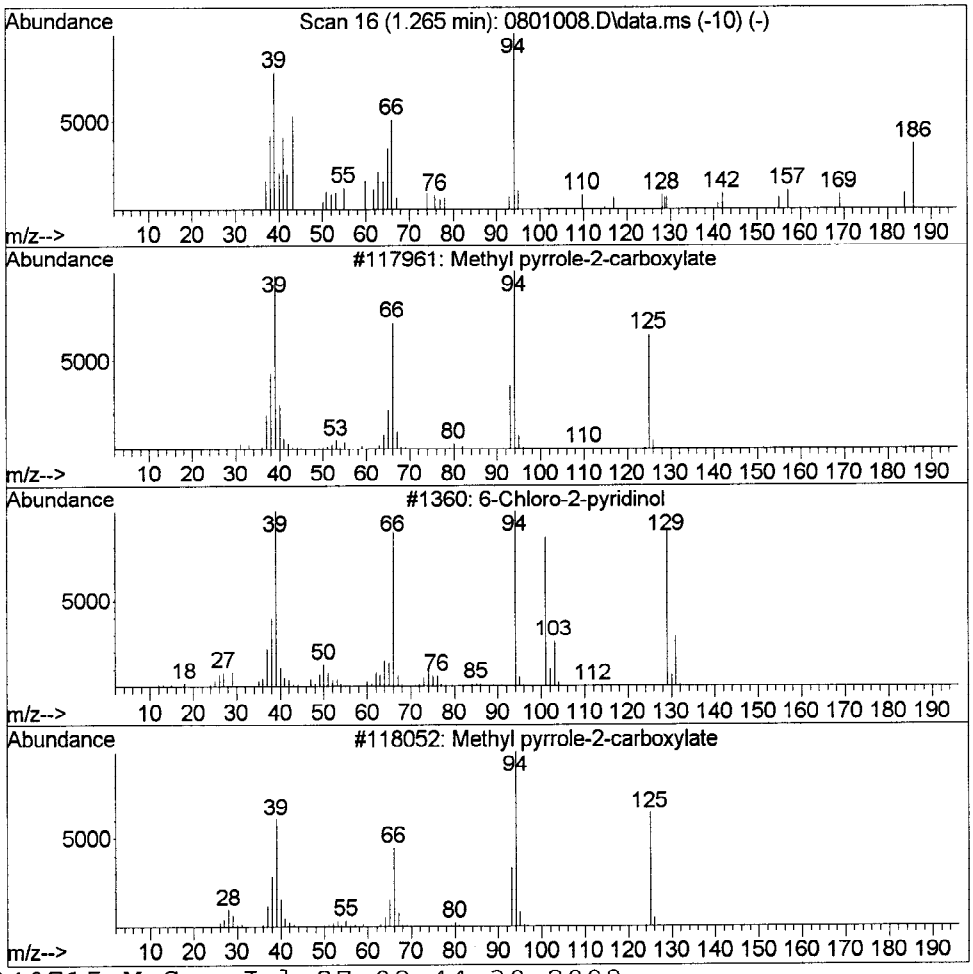
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

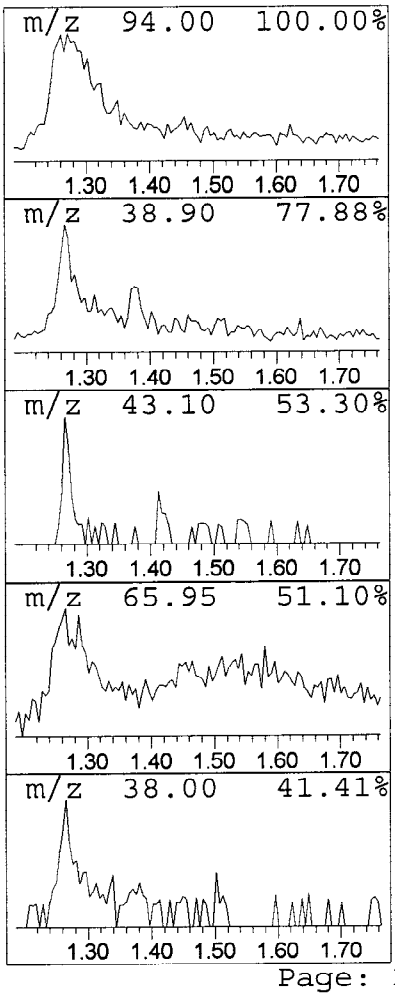
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Peak Number 1 Methyl pyrrole-2-carboxylate Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.265	0.53 ug/l	55518	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Methyl pyrrole-2-carboxylate	125	C6H7NO2	001193-62-0	78
2	6-Chloro-2-pyridinol	129	C5H4ClNO	016879-02-0	59
3	Methyl pyrrole-2-carboxylate	125	C6H7NO2	001193-62-0	50
4	2H-Pyran-5-carboxylic acid, 2-oxo-	140	C6H4O4	000500-05-0	47
5	Benzenesulfonic acid, 4-hydroxy-	174	C6H6O4S	000098-67-9	46





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60724\
Data File : 0801008.D
Acq On : 24 Jul 2008 3:35 pm
Operator : Don Chamot
Sample : 08-5221-01H
Misc : SAMP 524
ALS Vial : 8 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

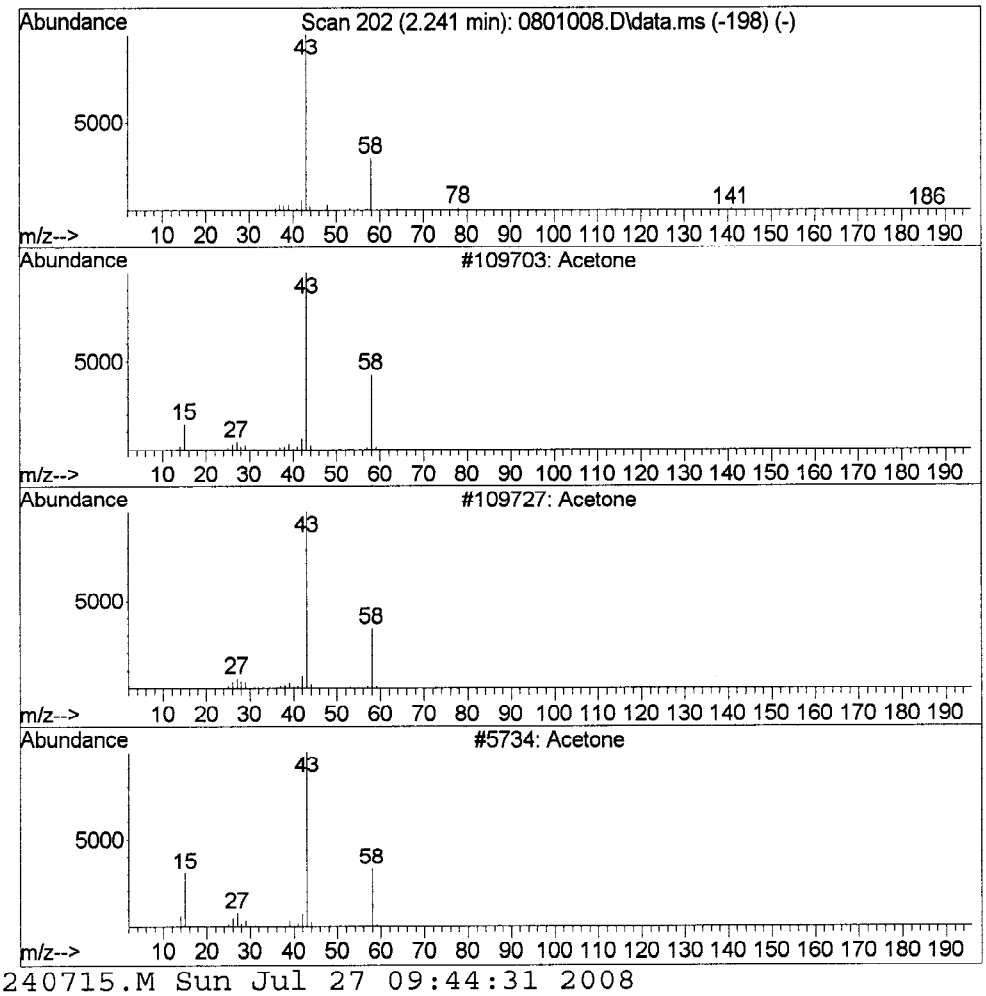
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

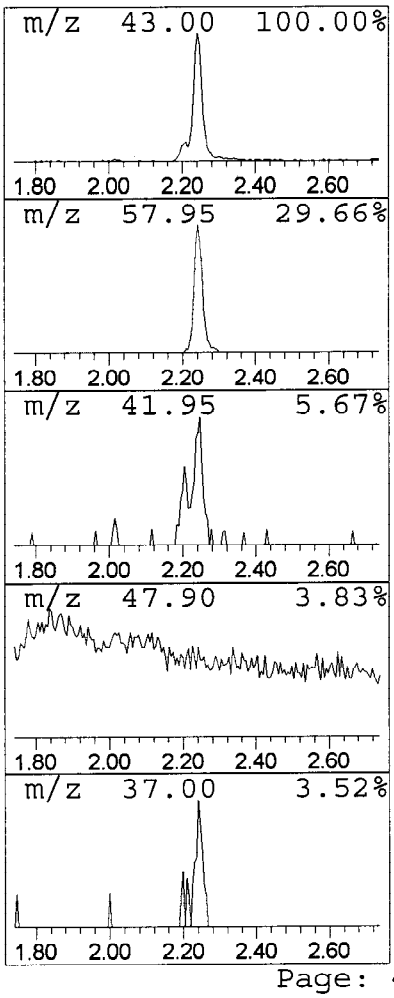
****

Peak Number 2 Acetone Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.241	0.67 ug/l	70091	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Acetone	58	C3H6O	000067-64-1	42
2	Acetone	58	C3H6O	000067-64-1	9
3	Acetone	58	C3H6O	000067-64-1	9
4	2-Pentanone, 4-hydroxy-4-methyl-	116	C6H12O2	000123-42-2	9
5	Acetone	58	C3H6O	000067-64-1	7





QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: R40799

Sample ID: MB 072308	SampType: MBLK	TestCode: anions_w	Run ID: IC-2000_080723A	Prep Date: 7/23/2008	Units: mg/L
	Batch ID: R40799	TestNo: E300.0	FileID: 5	Analysis Date: 7/23/2008	SeqNo: 716508

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0	0.50									
Nitrite-N	0	0.0040									
Bromide	0	0.050									
Nitrate-N	0	0.010									
Sulfate	0	0.50									

Sample ID: LCS	SampType: LCS	TestCode: anions_w	Run ID: IC-2000_080723A	Prep Date: 7/23/2008	Units: mg/L
	Batch ID: R40799	TestNo: E300.0	FileID: 30	Analysis Date: 7/23/2008	SeqNo: 716509

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	19.7	2.5	20	0	98.5	90	110	0	0		
Nitrite-N	6.312	0.020	6.09	0	104	90	110	0	0		
Bromide	20.53	0.25	20	0	103	90	110	0	0		
Nitrate-N	4.555	0.050	4.518	0	101	90	110	0	0		
Sulfate	30.68	2.5	30	0	102	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *28-Jul-08*

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 07/24/08**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080724A**	Prep Date: **7/24/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40805**	TestNo: **SM2320B**	FileID: **1**	Analysis Date: **7/24/2008**	SeqNo: **716693**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080724A**	Prep Date: **7/24/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40805**	TestNo: **SM2320B**	FileID: **2**	Analysis Date: **7/24/2008**	SeqNo: **716694**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	100.9	5.0	100	0	101	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 7/28/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080728A**	Prep Date: **7/28/2008**	Units: **mg/L**
	Batch ID: **R40871**	TestNo: **SM4500-CN**	FileID: **47**	Analysis Date: **7/28/2008**	SeqNo: **717804**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080728A**	Prep Date: **7/28/2008**	Units: **mg/L**
	Batch ID: **R40871**	TestNo: **SM4500-CN**	FileID: **48**	Analysis Date: **7/28/2008**	SeqNo: **717805**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.09965	0.010	0.104	0	95.8	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID **MBLK 07/24/08**	SampType: **MBLK**	TestCode: **F_W**	Run ID: **F_080724A**	Prep Date: **7/24/2008**	Units: **mg/L**
	Batch ID: **R40801**	TestNo: **SM 4500-F C**	FileID: **1**	Analysis Date: **7/24/2008**	SeqNo: **716601**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID **LCS**	SampType: **LCS**	TestCode: **F_W**	Run ID: **F_080724A**	Prep Date: **7/24/2008**	Units: **mg/L**
	Batch ID: **R40801**	TestNo: **SM 4500-F C**	FileID: **2**	Analysis Date: **7/24/2008**	SeqNo: **716602**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	9.675	0.20	10	0	96.8	95	105	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID	LCS-R40767	SampType:	LCS	TestCode:	PH_W	Run ID:	PH_080723A	Prep Date:	7/23/2008	Units:	pH Units
		Batch ID:	R40767	TestNo:	SM 4500H+ B	FileID:		Analysis Date:	7/23/2008	SeqNo:	715963

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.03	1.00	8	0	100	99.3	100.7	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 07/23/08**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080723A**	Prep Date: **7/23/2008**	Units: **mg/L**
	Batch ID: **R40773**	TestNo: **SM 4500-S C/**	FileID: **62**	Analysis Date: **7/23/2008**	SeqNo: **716028**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080723A**	Prep Date: **7/23/2008**	Units: **mg/L**
	Batch ID: **R40773**	TestNo: **SM 4500-S C/**	FileID: **63**	Analysis Date: **7/23/2008**	SeqNo: **716029**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.8	0.50	1.7	0	106	60	120	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK 7/24/08**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080724A**	Prep Date: **7/24/2008**	Units: **mg/L**
	Batch ID: **R40839**	TestNo: **SM 2540C**	FileID: **47**	Analysis Date: **7/24/2008**	SeqNo: **717111**

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_080724A**	Prep Date: **7/24/2008**	Units: **mg/L**
	Batch ID: **R40839**	TestNo: **SM 2540C**	FileID: **48**	Analysis Date: **7/24/2008**	SeqNo: **717112**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	400	10.0	400	0	100	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 07/25/08**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080725A**	Prep Date: **7/25/2008**	Units: **mg/L**
	Batch ID: **R40848**	TestNo: **SM 2540 D**	FileID: **1**	Analysis Date: **7/25/2008**	SeqNo: **717238**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080725A**	Prep Date: **7/25/2008**	Units: **mg/L**
	Batch ID: **R40848**	TestNo: **SM 2540 D**	FileID: **2**	Analysis Date: **7/25/2008**	SeqNo: **717239**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	278.5	5.0	300	0	92.8	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *24-Jul-08*

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16141**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16141**	TestNo: **E504.1**	FileID: **040.D**	Analysis Date: **7/23/2008**	SeqNo: **716292**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16141**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16141**	TestNo: **E504.1**	FileID: **041.D**	Analysis Date: **7/23/2008**	SeqNo: **716293**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.283	0.020	0.25	0	113	70	130	0	0		
1,2-Dibromoethane	0.277	0.010	0.25	0	111	70	130	0	0		

Sample ID: **08-5113-04AMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16141**	TestNo: **E504.1**	FileID: **043.D**	Analysis Date: **7/23/2008**	SeqNo: **716295**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.042	0.020	1	0	104	65	135	0	0		
1,2-Dibromoethane	0.985	0.010	1	0	98.5	65	135	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *23-Jul-08*

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072308

Sample ID: **GB072308**	SampType: **MBLK**	TestCode: **MEEP_W**	Run ID: **FID4_080723A**	Prep Date: **7/23/08**	Units: **mg/L**
	Batch ID: **GAS072308**	TestNo: **RSKSOP175**	FileID: **GAS072304**	Analysis Date: **7/23/08**	SeqNo: **716070**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS072308**	SampType: **LCS**	TestCode: **MEEP_W**	Run ID: **FID4_080723A**	Prep Date: **7/23/08**	Units: **mg/L**
	Batch ID: **GAS072308**	TestNo: **RSKSOP175**	FileID: **GAS072305**	Analysis Date: **7/23/08**	SeqNo: **716071**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.137	0.016	0.9548	0	119	70	130	0	0		
Ethene	1.273	0.024	0.8913	0	143	70	140	0	0		S
Methane	0.5819	0.0080	0.5094	0	114	70	130	0	0		

Sample ID: **LCSD072308**	SampType: **LCSD**	TestCode: **MEEP_W**	Run ID: **FID4_080723A**	Prep Date: **7/23/08**	Units: **mg/L**
	Batch ID: **GAS072308**	TestNo: **RSKSOP175**	FileID: **GAS072306**	Analysis Date: **7/23/08**	SeqNo: **716072**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.141	0.016	0.9548	0	120	70	130	1.137	0.400	30	
Ethene	1.275	0.024	0.8913	0	143	70	140	1.273	0.198	30	S
Methane	0.584	0.0080	0.5094	0	115	70	130	0.5819	0.352	30	

Sample ID: **08-5218-03CMS**	SampType: **MS**	TestCode: **MEEP_W**	Run ID: **FID4_080723A**	Prep Date: **7/23/08**	Units: **mg/L**
	Batch ID: **GAS072308**	TestNo: **RSKSOP175**	FileID: **GAS072310**	Analysis Date: **7/23/08**	SeqNo: **716066**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.012	0.016	0.9548	0	106	70	130	0	0		
Ethene	1.133	0.024	0.8913	0	127	70	140	0	0		
Methane	0.5216	0.0080	0.5094	0	102	70	130	0	0		

Qualifiers:

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072308

Sample ID: **08-5218-03CMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080723A**	Prep Date: **7/23/08**	Units: **mg/L**
	Batch ID: **GAS072308**	TestNo: **RSKSOP175**	FileID: **GAS072311**	Analysis Date: **7/23/08**	SeqNo: **716067**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	0.999	0.016	0.9548	0	105	70	130	1.012	1.29	30	
Ethene	1.113	0.024	0.8913	0	125	70	140	1.133	1.83	30	
Methane	0.5152	0.0080	0.5094	0	101	70	130	0.5216	1.22	30	

Qualifiers:

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B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *27-Jul-08*

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6072408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/24/2008**	SeqNo: **717418**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: MB6072408	SampType: MBLK	TestCode: 524	Run ID: VOA-6_080724A	Prep Date: 7/24/2008	Units: µg/L
	Batch ID: R40857	TestNo: E524.2	FileID: 0501005.D	Analysis Date: 7/24/2008	SeqNo: 717418

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

Qualifiers:

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J - Analyte detected below quantitation limits
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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6072408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/24/2008**	SeqNo: **717418**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	5.03	0	5	0	101	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.04	0	5	0	101	70	130	0	0		

Sample ID: **LCS6072408**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/24/2008**	SeqNo: **717419**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.04	0.50	5	0	101	70	130	0	0		
Bromobenzene	4.96	0.50	5	0	99.2	70	130	0	0		
Bromochloromethane	4.81	0.50	5	0	96.2	70	130	0	0		
Bromodichloromethane	5.18	0.50	5	0	104	70	130	0	0		
Bromoform	4.48	0.50	5	0	89.6	70	130	0	0		
Bromomethane	5.33	0.50	5	0	107	70	130	0	0		
n-Butylbenzene	4.83	0.50	5	0	96.6	70	130	0	0		
sec-Butylbenzene	4.93	0.50	5	0	98.6	70	130	0	0		
t-Butylbenzene	5.04	0.50	5	0	101	70	130	0	0		
Carbon tetrachloride	5.31	0.50	5	0	106	70	130	0	0		
Chlorobenzene	4.98	0.50	5	0	99.6	70	130	0	0		
Chloroethane	4.68	0.50	5	0	93.6	70	130	0	0		
Chloroform	5.09	0.50	5	0	102	70	130	0	0		
Chloromethane	4.58	0.50	5	0	91.6	70	130	0	0		
2-Chlorotoluene	5.02	0.50	5	0	100	70	130	0	0		
4-Chlorotoluene	4.81	0.50	5	0	96.2	70	130	0	0		
Dibromochloromethane	4.67	0.50	5	0	93.4	70	130	0	0		
Dibromomethane	5.08	0.50	5	0	102	70	130	0	0		
1,2-Dichlorobenzene	4.84	0.50	5	0	96.8	70	130	0	0		
1,3-Dichlorobenzene	4.8	0.50	5	0	96	70	130	0	0		
1,4-Dichlorobenzene	4.69	0.50	5	0	93.8	70	130	0	0		
Dichlorodifluoromethane	5.71	0.50	5	0	114	70	130	0	0		
1,1-Dichloroethane	5.22	0.50	5	0	104	70	130	0	0		
1,2-Dichloroethane	4.86	0.50	5	0	97.2	70	130	0	0		

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS6072408**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/24/2008**	SeqNo: **717419**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	5.29	0.50	5	0	106	70	130	0	0		
cis-1,2-Dichloroethene	5.27	0.50	5	0	105	70	130	0	0		
trans-1,2-Dichloroethene	5.18	0.50	5	0	104	70	130	0	0		
1,2-Dichloropropane	5.32	0.50	5	0	106	70	130	0	0		
1,3-Dichloropropane	4.98	0.50	5	0	99.6	70	130	0	0		
2,2-Dichloropropane	4.51	0.50	5	0	90.2	70	130	0	0		
1,1-Dichloropropene	5.08	0.50	5	0	102	70	130	0	0		
cis-1,3-Dichloropropene	4.9	0.50	5	0	98	70	130	0	0		
trans-1,3-Dichloropropene	4.57	0.50	5	0	91.4	70	130	0	0		
Ethylbenzene	5.09	0.50	5	0	102	70	130	0	0		
Hexachlorobutadiene	4.89	0.50	5	0	97.8	70	130	0	0		
Isopropylbenzene	4.51	0.50	5	0	90.2	70	130	0	0		
p-Isopropyltoluene	4.82	0.50	5	0	96.4	70	130	0	0		
Methylene chloride	5.25	0.50	5	0	105	70	130	0	0		
Naphthalene	4.68	0.50	5	0	93.6	70	130	0	0		
n-Propylbenzene	4.95	0.50	5	0	99	70	130	0	0		
Styrene	5.08	0.50	5	0	102	70	130	0	0		
1,1,1,2-Tetrachloroethane	5.01	0.50	5	0	100	70	130	0	0		
1,1,2,2-Tetrachloroethane	4.91	0.50	5	0	98.2	70	130	0	0		
Tetrachloroethene	5	0.50	5	0	100	70	130	0	0		
Toluene	5.08	0.50	5	0	102	70	130	0	0		
1,2,3-Trichlorobenzene	4.83	0.50	5	0	96.6	70	130	0	0		
1,2,4-Trichlorobenzene	4.83	0.50	5	0	96.6	70	130	0	0		
1,1,1-Trichloroethane	5.34	0.50	5	0	107	70	130	0	0		
1,1,2-Trichloroethane	5.22	0.50	5	0	104	70	130	0	0		
Trichloroethene	5.19	0.50	5	0	104	70	130	0	0		
Trichlorofluoromethane	4.73	0.50	5	0	94.6	70	130	0	0		
1,2,3-Trichloropropane	4.78	0.50	5	0	95.6	70	130	0	0		
1,2,4-Trimethylbenzene	5.12	0.50	5	0	102	70	130	0	0		
1,3,5-Trimethylbenzene	5	0.50	5	0	100	70	130	0	0		
Vinyl chloride	5.66	0.50	5	0	113	70	130	0	0		

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H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5221
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS6072408**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080724A**	Prep Date: **7/24/2008**	Units: **µg/L**
	Batch ID: **R40857**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/24/2008**	SeqNo: **717419**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	9.88	0.50	10	0	98.8	70	130	0	0		
o-Xylene	4.85	0.50	5	0	97	70	130	0	0		
1,3-Dichloropropene	9.47	0.50	10	0	94.7	70	130	0	0		
Xylenes, Total	14.73	0.50	15	0	98.2	70	130	0	0		
Total THM (Summation of above)	19.42	0.50	20	0	97.1	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	4.9	0	5	0	98	70	130	0	0		
Surr: 4-Bromofluorobenzene	4.98	0	5	0	99.6	70	130	0	0		

Qualifiers:

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J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical Laboratory

August 25, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-5221
Client Project ID:

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

001

WORK ORDER Summary Evergreen Analytical, Inc. 08-5431

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

7/31/2008 10:28:27 AM

Client Project ID:

QC Level: LEVEL I+

Comments: PDF + EDD in Pinery

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-5431-01A	Inj 05 PT	Water	7/28/08 1506	7/30/08	RAD226/228	Radium 226/228	☐	☐	8/13/08	1/24/09
08-5431-01B	Inj 05 PT	Water	7/28/08 1506	7/30/08	ALBETA	Gross Alpha-Beta	☐	☐	8/13/08	1/24/09
08-5431-01B	Inj 05 PT	Water	7/28/08 1506	7/30/08	TS_SUB	Total Solids for Gross A B	☐	☐	8/13/08	8/04/08
08-5431-01C	Inj 05 PT	Water	7/28/08 1506	7/30/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	8/13/08	7/30/08
08-5431-01D	Inj 05 PT	Water	7/28/08 1506	7/30/08	F_W	Fluoride	☐	☐	8/13/08	8/25/08
08-5431-01E	Inj 05 PT	Water	7/28/08 1506	7/30/08	200.8_TR *	200.8: Total Metals	☐	☐	8/13/08	1/24/09
08-5431-01E	Inj 05 PT	Water	7/28/08 1506	7/30/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	8/13/08	8/25/08
08-5431-01F	Inj 05 PT	Water	7/28/08 1506	7/30/08	504 *	504: Standard List	☐	☐	8/13/08	8/11/08
08-5431-01G	Inj 05 PT	Water	7/28/08 1506	7/30/08	MEEP_W *	RSK175M: MEE	☐	☐	8/13/08	8/11/08
08-5431-01H	Inj 05 PT	Water	7/28/08 1506	7/30/08	524 *	524.2: Standard List	☐	☐	8/13/08	8/11/08
08-5431-01H	Inj 05 PT	Water	7/28/08 1506	7/30/08	VOATICS	VOA TICS (Largest 10)	☐	☐	8/13/08	8/11/08
08-5431-01I	Inj 05 PT	Water	7/28/08 1506	7/30/08	CN_TW	Total Cyanide	☐	☐	8/13/08	8/11/08
08-5431-01J	Inj 05 PT	Water	7/28/08 1506	7/30/08	SULF_W	Total Sulfide	☐	☐	8/13/08	8/04/08
08-5431-01K	Inj 05 PT	Water	7/28/08 1506	7/30/08	ALK_WGRP *	Alkalinity	☐	☐	8/13/08	8/11/08
08-5431-01K	Inj 05 PT	Water	7/28/08 1506	7/30/08	PH_W	Discharge Water pH	☐	☐	8/13/08	7/28/08
08-5431-01K	Inj 05 PT	Water	7/28/08 1506	7/30/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	8/13/08	8/04/08
08-5431-01K	Inj 05 PT	Water	7/28/08 1506	7/30/08	TSS	Total Suspended Solids (TSS)	☐	☐	8/13/08	8/04/08

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Page 1 of 1

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

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☒ PDF ☒ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571
Project ID#
P.O. Quote 10165
Sampler Mike Barrett

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.

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) | Soil / Solid / Air / Gas | Oil / Sludge / Wipe | Radium 226/228 | Gross Alpha-Beta | 300.0 DW Anions by IC | Fluoride | 200.8 Drinking water II Regulated | Total Solids Ser Gress AB | 504.1 EDB/DBCP | RSKSOP-175 M | VOA TICS | Total Cyanide | Total Sulfide | TDS, TSS, pH | | |

Evergreen Analytical, Inc.

Date: *25-Aug-08*

Lab Order: 08-5431
Client Project ID

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 0.4 °C.
Sample(s) were received in good condition, in the proper container.
The pH sample was received out of holding time.
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 (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of RCRA samples meet the requirements of NELAC and Utah Rule R444-14 unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained. CMS

CLIENT SERVICES

The sample was logged in for alkalinity analysis per the quotation.
The metal and anion analytes were selected per the quotation. EKH

GENERAL CHEMISTRY

The pH required analysis out of holding time (H). There are no other anomalies to report. MM/CMS

METALS ANALYSIS

Sample(s) were preserved by the metals group prior to analysis.
This sample was turbid and required 200.8 total digestion prior to analysis.
Lead was detected in the method blank (MB) at 0.001 mg/L. This amount was not subtracted from the sample result. There are no other anomalies to report. MB/CMS

GAS CHROMATOGRAPHY

Method 504.1: There are no anomalies to report. AE
Method RSK175M: Laboratory control spike (LCS), laboratory control spike duplicate (LCSD), and matrix spike duplicate (MSD) recoveries for Ethene are above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS

Evergreen Analytical, Inc.

Date: *25-Aug-08*

Lab Order: 08-5431

Client Project ID

CASE NARRATIVE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: There are no anomalies to report. DC

005

AUG 25 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 7982

WorkOrder: 08-5431

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

30-Jul-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests						
				ALPHABETA	RAD226/228	TS				
					(4)					
08-5431-01A	Water	7/28/2008 3:06:00 PM	1LPHNO3		1					
08-5431-01B	Water	7/28/2008 3:06:00 PM	1LPHNO3	1		1				

Comments:

Relinquished by:	7/31/08 2:40 PM	**Received by:**	7-31-08 1440
Relinquished by:		**Received by:**	

AUG 25 2008

006

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 22, 2008
HRI PROJECT	009-93
HRI SERIES NO	G512/08
DATE REC'D.	7/31/2008
CUST. P.O.#	7982

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G512/08-1

SAMPLE IDENTIFICATION: 08-5431-01A, B - sampled on 07/28/2008 @ 1506

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	3.8(+-2.6)	1.3	SM 7110 B	8/21/2008 @ 0841	AN
Gross Beta (+-Precision*), pCi/l (T)	2.2(+-2.2)	2.0	SM 7110 B	8/21/2008 @ 0841	AN
Radium-226 (+-Precision*), pCi/l (T)	0.1(+-0.3)	0.2	SM 7500-Ra B	8/14/2008 @ 0910	EDF
Radium-228 (+-Precision*), pCi/l (T)	0.4(+-0.7)	0.7	EPA Ra-05	8/14/2008 @ 1442	AN
Total Solids, mg/l	373	10	EPA 160.3	8/11/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808;
NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 05 PT
Client Project ID:
Date Collected: 7/28/08 1506
Date Received: 7/30/08

Lab Work Order: 08-5431
Lab Sample ID: 08-5431-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 7/30/08 **Lab File ID:** 24 **Dilution Factor:** 1
Date Analyzed: 7/30/08 1351 **Method Blank:** MB 073008 **Lab Fraction ID:** 08-5431-01C

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	11.0	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	U	0.20	mg/L
Nitrate-N		U	0.045	mg/L

Date Prepared: 7/30/08 **Lab File ID:** 25 **Dilution Factor:** 5
Date Analyzed: 7/30/08 1757 **Method Blank:** MB 073008 **Lab Fraction ID:** 08-5431-01C

Analytes	CAS Number	Result	LQL	Units
Sulfate	7778-80-2	131	2.5	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/1/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 05 PT
Client Project ID:
Date Collected: 7/28/08 1506
Date Received: 7/30/08

Lab Work Order 08-5431
Lab Sample ID: 08-5431-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 7/30/08 **Lab File ID:** 79 **Dilution Factor:** 1
Date Analyzed: 7/30/08 **Method Blank:** MBLK 073008 **Lab Fraction ID:** 08-5431-01K

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		118	5.0	mg/L CaCO3
Bicarbonate		108	5.0	mg/L CaCO3
Carbonate		10.6	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 8/6/08 **Lab File ID:** 54 **Dilution Factor:** 1
Date Analyzed: 8/6/08 **Method Blank:** MBLK 08/06/08 **Lab Fraction ID:** 08-5431-01I

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 8/5/08 **Lab File ID:** 8 **Dilution Factor:** 1
Date Analyzed: 8/5/08 **Method Blank:** MBLK 080508 **Lab Fraction ID:** 08-5431-01D

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	3.7	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 7/30/08 **Dilution Factor:** 1
Date Analyzed: 7/30/08 1320 **Lab Fraction ID:** 08-5431-01K

Analytes	CAS Number	Result	LQL	Units
pH		8.90 H	1.00	pH Units

Analyst

Approved

Qualifiers:
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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
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Definitions:
NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 8/7/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 05 PT
Client Project ID:
Date Collected: 7/28/08 1506
Date Received: 7/30/08

Lab Work Order 08-5431
Lab Sample ID: 08-5431-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 8/1/08 **Lab File ID:** 62 **Dilution Factor:** 1
Date Analyzed: 8/1/08 **Method Blank:** MBLK 080108 **Lab Fraction ID:** 08-5431-01J

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 7/31/08 **Lab File ID:** 20 **Dilution Factor:** 1
Date Analyzed: 7/31/08 **Method Blank:** MBLK 073108 **Lab Fraction ID:** 08-5431-01K

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		356	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 8/4/08 **Lab File ID:** 3 **Dilution Factor:** 1
Date Analyzed: 8/4/08 **Method Blank:** MBLK 080408 **Lab Fraction ID:** 08-5431-01K

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		22.5	5.0	mg/L

Analyst

Approved

Qualifiers:
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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/7/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 05 PT
Client Project ID:
Date Collected: 7/28/08
Date Received: 7/30/08

Lab Work Order 08-5431
Lab Sample ID: 08-5431-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 7/31/08
Date Analyzed: 8/2/08
Lab File ID: 080802A.B\062SMPL.D
Method Blank: MB-16229
Dilution Factor: 1
Lab Fraction ID: 08-5431-01E

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.0247	0.0100	mg/L
Beryllium	7440-41-7	U	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	5.20	0.400	mg/L
Chromium	7440-47-3	U	0.00220	mg/L
Copper	7440-50-8	U	0.0100	mg/L
Iron	7439-89-6	1.06	0.200	mg/L
Lead	7439-92-1	U	0.00100	mg/L
Magnesium	7439-95-4	0.175	0.0500	mg/L
Manganese	7439-96-5	0.0262	0.00500	mg/L
Molybdenum	7439-98-7	U	0.00500	mg/L
Nickel	7440-02-0	U	0.0100	mg/L
Potassium	7440-09-7	0.337	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	117	0.500	mg/L
Strontium	7440-24-6	0.114	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	U	0.00500	mg/L

MB
Analyst

Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/7/08

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 05 PT
Client Project ID:
Date Collected: 7/28/08
Date Received: 7/30/08

Lab Work Order 08-5431
Lab Sample ID: 08-5431-01
Sample Matrix: Water

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 8/4/08
Date Analyzed: 8/4/08
Lab File ID: 80408
Method Blank: MB-16247
Dilution Factor: 1
Lab Fraction ID: 08-5431-01E

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	mg/L

MB
Analyst

JB
Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Sample analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/7/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 05 PT	**Lab Work Order:**	08-5431
Client Project ID:		**Lab Sample ID:**	08-5431-01F
Date Collected:	7/28/2008	**Sample Matrix:**	Water
Date Received:	7/30/2008	**Lab File ID:**	023.D
Date Prepared:	7/31/2008	**Method Blank:**	MB-16222
Date Analyzed:	7/31/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
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E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/1/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 05 PT	**Lab Work Order**	08-5431
Client Project ID:		**Lab Sample ID:**	08-5431-01G
Date Collected:	7/28/08	**Sample Matrix:**	Water
Date Received:	7/30/08	**Lab File ID:**	GAS080608
Date Prepared:	8/6/08	**Method Blank:**	GB080608
Date Analyzed:	8/6/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	10.00

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

Analytes	CAS Number	Result	LQL
Methane	74-82-8	3.1	0.0080

Analyst

Approved

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/6/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 05 PT	**Lab Work Order**	08-5431
Client Project ID:		**Lab Sample ID:**	08-5431-01G
Date Collected:	7/28/08	**Sample Matrix:**	Water
Date Received:	7/30/08	**Lab File ID:**	GAS080607
Date Prepared:	8/6/08	**Method Blank:**	GB080608
Date Analyzed:	8/6/08	**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
Ethane	74-84-0	0.0030	0.0016
Ethene	74-85-1	U	0.0024

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
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H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/6/08

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 05 PT	**Lab Work Order:**	08-5431
Client Project ID:		**Lab Sample ID:**	08-5431-01H
Date Collected:	7/28/2008	**Sample Matrix:**	Water
Date Received:	7/30/2008	**Lab File ID:**	1801018.D
Date Prepared:	7/30/2008	**Method Blank:**	MB6073008
Date Analyzed:	7/30/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst

Approved

Qualifiers: **See case narrative for a discussion**

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E - Extrapolated value. Value exceeds calibration range
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S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/31/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 05 PT	**Lab Work Order:**	08-5431
Client Project ID:		**Lab Sample ID:**	08-5431-01H
Date Collected:	7/28/2008	**Sample Matrix:**	Water
Date Received:	7/30/2008	**Lab File ID:**	1801018.D
Date Prepared:	7/30/2008	**Method Blank:**	MB6073008
Date Analyzed:	7/30/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	U		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	98	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	97	**QC Limits:**	70-130 %REC

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
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H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
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Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

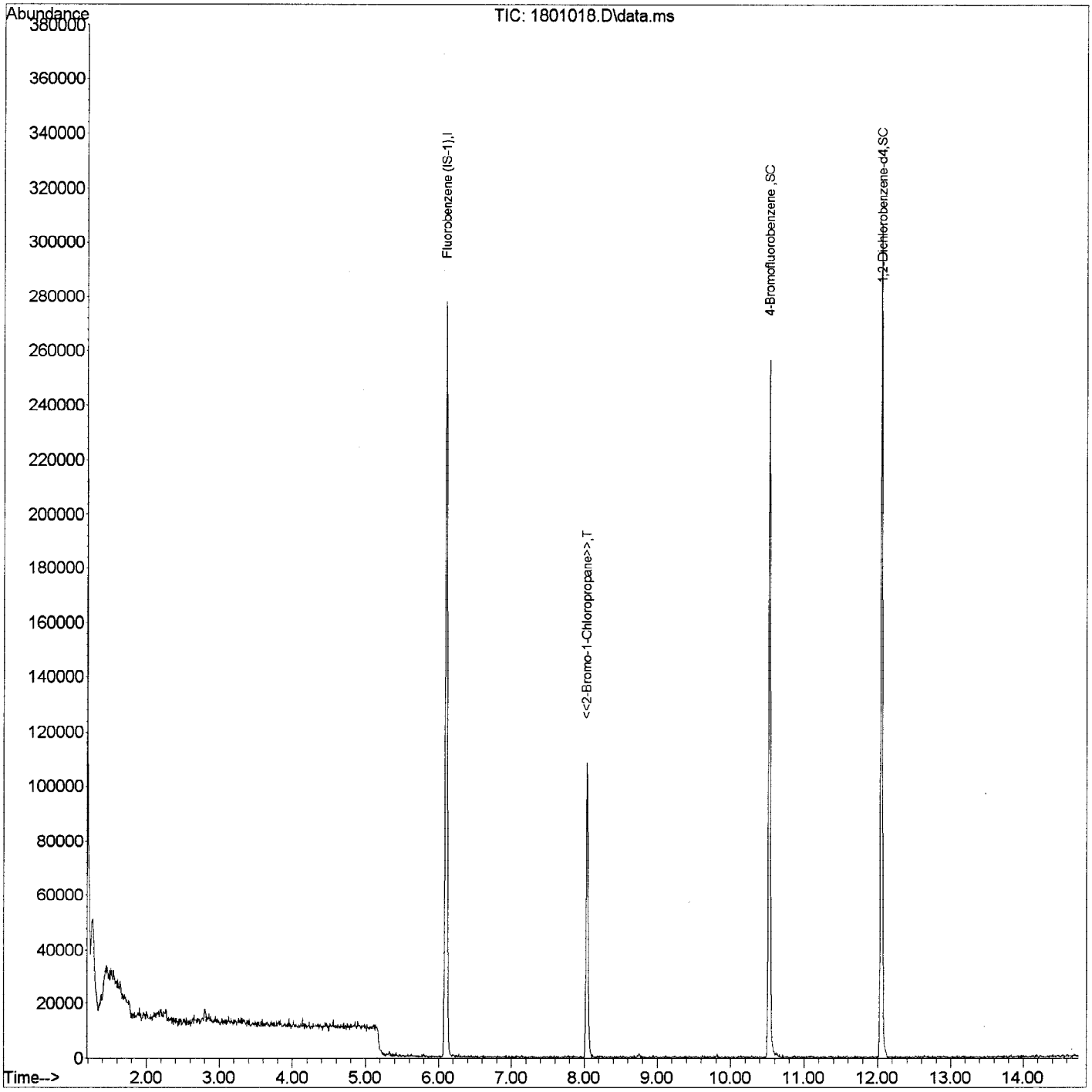
Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 7/31/2008

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1801018.D
Acq On : 30 Jul 2008 8:14 pm
Operator : Don Chamot
Sample : 08-5431-01H
Misc : SAMP 524
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jul 31 07:17:22 2008
Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1
QLast Update : Wed Jul 16 07:44:07 2008
Response via : Initial Calibration



7/31/08

Tentatively Identified Compound (LSC) summary

Data Path : C:\msdchem\1\DATA\VOA60730\\
Data File : 1801018.D
Acq On : 30 Jul 2008 8:14 pmm
Operator : Don Chamott
Sample : 08-5431-01HH
Misc : SAMP 5244
ALS Vial : 18 Sample Multiplier: 11

Quant Method : C:\msdchem\1\METHODS\5240715.MM
Quant Title : VOA4 524.2 Revision 4.11

TIC Library : C:\Database\NIST98.LL
TIC Integration Parameters: LSCINT.PP

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc

No Library Search Compounds Detected CWC

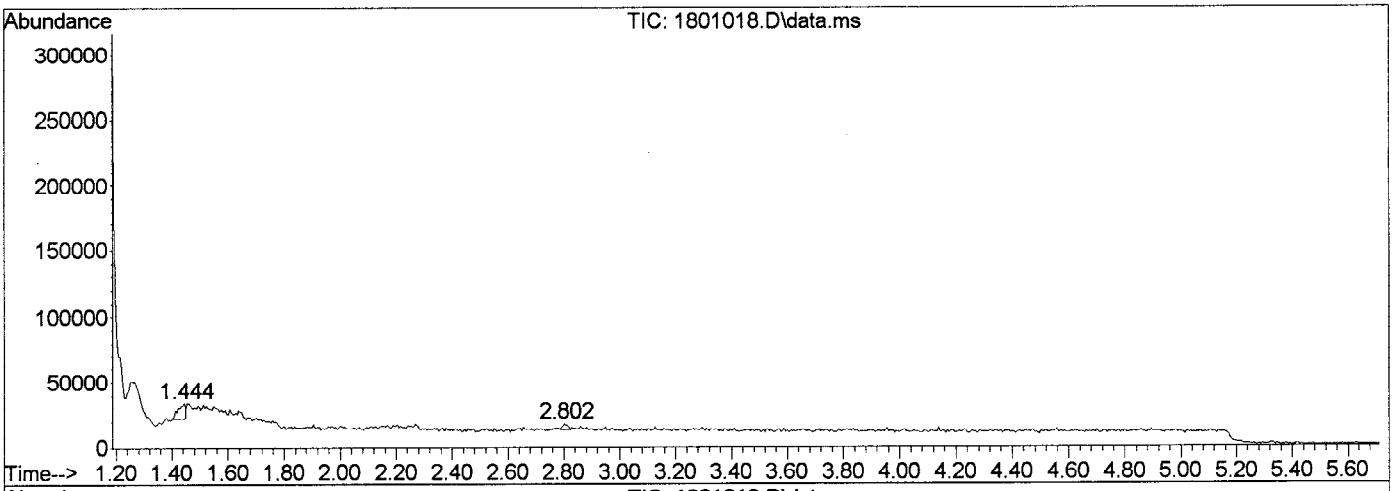
****

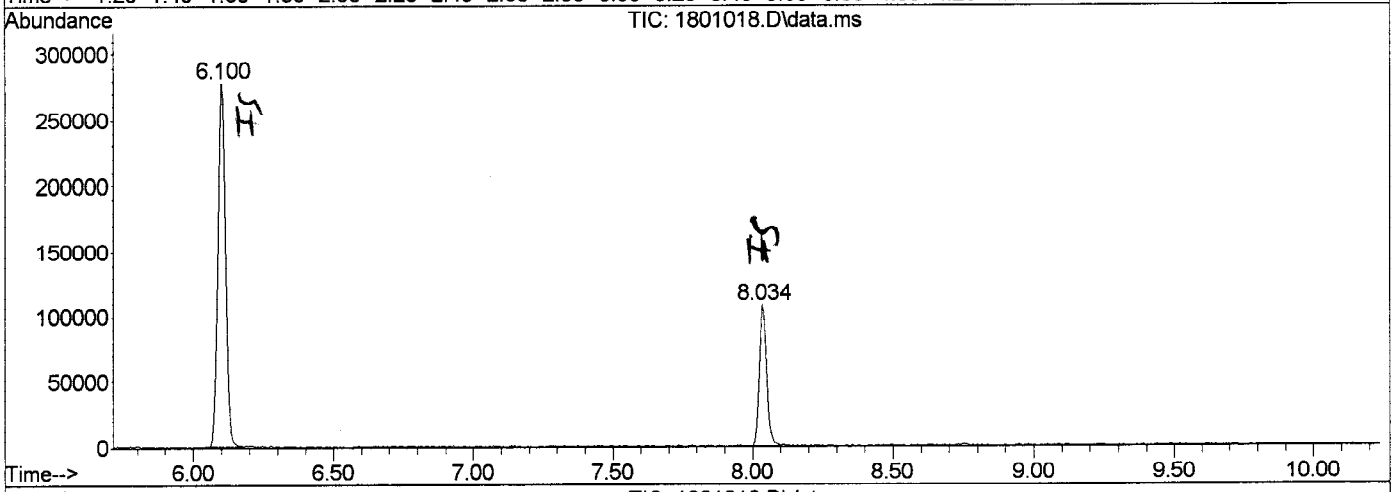
LSC Report - Integrated Chromatogram

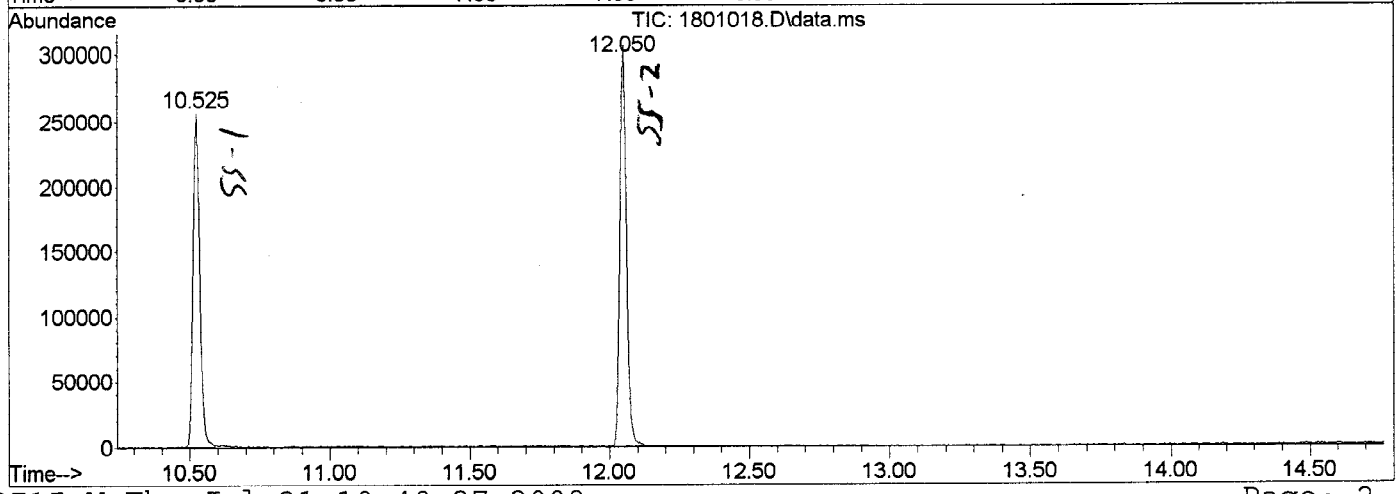
Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1801018.D
Acq On : 30 Jul 2008 8:14 pm
Operator : Don Chamot
Sample : 08-5431-01H
Misc : SAMP 524
ALS Vial : 18 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P







QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: R40973

Sample ID: MB 073008	SampType: MBLK	TestCode: anions_w	Run ID: IC-2000_080730A	Prep Date: 7/30/2008	Units: mg/L
	Batch ID: R40973	TestNo: E300.0	FileID: 5	Analysis Date: 7/30/2008	SeqNo: 719918

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0	0.50									
Nitrite-N	0	0.0040									
Bromide	0	0.050									
Nitrate-N	0	0.010									
Sulfate	0	0.50									

Sample ID: LCS	SampType: LCS	TestCode: anions_w	Run ID: IC-2000_080730A	Prep Date: 7/30/2008	Units: mg/L
	Batch ID: R40973	TestNo: E300.0	FileID: 30	Analysis Date: 7/30/2008	SeqNo: 719919

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	18.67	2.5	20	0	93.4	90	110	0	0		
Nitrite-N	5.981	0.020	6.09	0	98.2	90	110	0	0		
Bromide	19.35	0.25	20	0	96.8	90	110	0	0		
Nitrate-N	4.299	0.050	4.518	0	95.2	90	110	0	0		
Sulfate	29.13	2.5	30	0	97.1	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *07-Aug-08*

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 073008**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080730B**	Prep Date: **7/30/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40941**	TestNo: **SM2320B**	FileID: **117**	Analysis Date: **7/30/2008**	SeqNo: **719150**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080730B**	Prep Date: **7/30/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40941**	TestNo: **SM2320B**	FileID: **118**	Analysis Date: **7/30/2008**	SeqNo: **719151**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	103.2	5.0	100	0	103	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 08/06/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080806B**	Prep Date: **8/6/2008**	Units: **mg/L**
	Batch ID: **R41101**	TestNo: **SM4500-CN**	FileID: **47**	Analysis Date: **8/6/2008**	SeqNo: **722196**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080806B**	Prep Date: **8/6/2008**	Units: **mg/L**
	Batch ID: **R41101**	TestNo: **SM4500-CN**	FileID: **48**	Analysis Date: **8/6/2008**	SeqNo: **722197**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.09496	0.010	0.104	0	91.3	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID **MBLK 080508**	SampType: **MBLK**	TestCode: **F_W**	Run ID: **F_080805A**	Prep Date: **8/5/2008**	Units: **mg/L**
	Batch ID: **R41064**	TestNo: **SM 4500-F C**	FileID: **47**	Analysis Date: **8/5/2008**	SeqNo: **721461**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID **LCS**	SampType: **LCS**	TestCode: **F_W**	Run ID: **F_080805A**	Prep Date: **8/5/2008**	Units: **mg/L**
	Batch ID: **R41064**	TestNo: **SM 4500-F C**	FileID: **48**	Analysis Date: **8/5/2008**	SeqNo: **721462**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	9.83	0.20	10	0	98.3	95	105	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID **LCS-R40939** SampType: **LCS** TestCode: **PH_W** Run ID: **PH_080730B** Prep Date: **7/30/2008** Units: **pH Units**
Batch ID: **R40939** TestNo: **SM 4500H+ B** FileID: Analysis Date: **7/30/2008** SeqNo: **719133**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.98	1.00	8	0	99.8	99.3	100.7	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 080108**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080801A**	Prep Date: **8/1/2008**	Units: **mg/L**
	Batch ID: **R41000**	TestNo: **SM 4500-S C/**	FileID: **60**	Analysis Date: **8/1/2008**	SeqNo: **720349**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080801A**	Prep Date: **8/1/2008**	Units: **mg/L**
	Batch ID: **R41000**	TestNo: **SM 4500-S C/**	FileID: **61**	Analysis Date: **8/1/2008**	SeqNo: **720350**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.6	0.50	1.7	0	94.1	60	120	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK 073108**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080801A**	Prep Date: **7/31/2008**	Units: **mg/L**
	Batch ID: **R41005**	TestNo: **SM 2540C**	FileID: **47**	Analysis Date: **7/31/2008**	SeqNo: **720391**

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_080801A**	Prep Date: **7/31/2008**	Units: **mg/L**
	Batch ID: **R41005**	TestNo: **SM 2540C**	FileID: **48**	Analysis Date: **7/31/2008**	SeqNo: **720392**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	402	10.0	400	0	101	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 080408**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080804A**	Prep Date: **8/4/2008**	Units: **mg/L**
	Batch ID: **R41044**	TestNo: **SM 2540 D**	FileID: **47**	Analysis Date: **8/4/2008**	SeqNo: **721174**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080804A**	Prep Date: **8/4/2008**	Units: **mg/L**
	Batch ID: **R41044**	TestNo: **SM 2540 D**	FileID: **48**	Analysis Date: **8/4/2008**	SeqNo: **721175**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	283	5.0	300	0	94.3	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *07-Aug-08*

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: 16229

Sample ID: **MB-16229**	SampType: **MBLK**	TestCode: **200.8_TR**	Run ID: **ICPMS_080802A**	Prep Date: **7/31/08**	Units: **mg/L**
	Batch ID: **16229**	TestNo: **E200.8**	FileID: **080802A.B\046SMPL.D**	Analysis Date: **8/2/08**	SeqNo: **720821**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	U	0.00200									
Arsenic	U	0.00200									
Barium	U	0.0100									
Beryllium	U	0.00100									
Boron	U	0.200									
Cadmium	U	0.000500									
Calcium	U	0.400									
Chromium	U	0.00220									
Copper	U	0.0100									
Iron	U	0.200									
Lead	0.001052	0.00100									
Magnesium	U	0.0500									
Manganese	U	0.00500									
Molybdenum	U	0.00500									
Nickel	U	0.0100									
Potassium	U	0.125									
Selenium	U	0.00200									
Silver	U	0.000200									
Sodium	U	0.500									
Strontium	U	0.0980									
Thallium	U	0.00100									
Zinc	U	0.00500									

Sample ID: **LCS-16229**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080802A**	Prep Date: **7/31/08**	Units: **mg/L**
	Batch ID: **16229**	TestNo: **E200.8**	FileID: **080802A.B\047SMPL.D**	Analysis Date: **8/2/08**	SeqNo: **720822**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.01013	0.00200	0.01	0	101	85	115	0	0		
Arsenic	0.1002	0.00200	0.1	0	100	85	115	0	0		

Qualifiers:

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: 16229

Sample ID: **LCS-16229**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080802A**	Prep Date: **7/31/08**	Units: **mg/L**
	Batch ID: **16229**	TestNo: **E200.8**	FileID: **080802A.B\047SMPL.D**	Analysis Date: **8/2/08**	SeqNo: **720822**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	0.0934	0.0100	0.1	0	93.4	85	115	0	0		
Beryllium	0.01018	0.00100	0.01	0	102	85	115	0	0		
Boron	0.9735	0.200	1	0.01079	97.4	85	115	0	0		
Cadmium	0.00939	0.000500	0.01	0	93.9	85	115	0	0		
Calcium	0.961	0.400	1	0	96.1	85	115	0	0		
Chromium	0.09375	0.00220	0.1	0	93.8	85	115	0	0		
Copper	0.1001	0.0100	0.1	0.001256	100	85	115	0	0		
Iron	0.8875	0.200	1	0	88.8	85	115	0	0		
Lead	0.01967	0.00100	0.02	0.001052	93.1	85	115	0	0		B
Magnesium	0.9775	0.0500	1	0	97.8	85	115	0	0		
Manganese	0.1913	0.00500	0.2	0	95.6	85	115	0	0		
Molybdenum	0.09335	0.00500	0.1	0	93.4	85	115	0	0		
Nickel	0.096	0.0100	0.1	0	96	85	115	0	0		
Potassium	0.94	0.125	1	0	94	85	115	0	0		
Selenium	0.02089	0.00200	0.02	0	104	85	115	0	0		
Silver	0.00933	0.000200	0.01	0	93.3	85	115	0	0		
Sodium	1.149	0.500	1	0.2066	115	85	115	0	0		
Strontium	U	0.0980	0.1	0	94	85	115	0	0		
Thallium	0.004471	0.00100	0.005	0	89.4	85	115	0	0		
Zinc	0.2103	0.00500	0.2	0	105	85	115	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: 16247

Sample ID: **MB-16247**	SampType: **MBLK**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080804A**	Prep Date: **8/4/08**	Units: **mg/L**
	Batch ID: **16247**	TestNo: **E245.1**	FileID: **80408**	Analysis Date: **8/4/08**	SeqNo: **720985**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0	0.000100									

Sample ID: **LCS-16247**	SampType: **LCS**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080804A**	Prep Date: **8/4/08**	Units: **mg/L**
	Batch ID: **16247**	TestNo: **E245.1**	FileID: **80408**	Analysis Date: **8/4/08**	SeqNo: **720986**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.000957	0.000100	0.001	0	95.7	85	115	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *01-Aug-08*

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16222**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080731A**	Prep Date: **7/31/2008**	Units: **µg/L**
	Batch ID: **16222**	TestNo: **E504.1**	FileID: **012.D**	Analysis Date: **7/31/2008**	SeqNo: **720129**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16222**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080731A**	Prep Date: **7/31/2008**	Units: **µg/L**
	Batch ID: **16222**	TestNo: **E504.1**	FileID: **013.D**	Analysis Date: **7/31/2008**	SeqNo: **720130**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.284	0.020	0.25	0	114	70	130	0	0		
1,2-Dibromoethane	0.271	0.010	0.25	0	108	70	130	0	0		

Sample ID: **LCS-16222-2**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080731A**	Prep Date: **7/31/2008**	Units: **µg/L**
	Batch ID: **16222**	TestNo: **E504.1**	FileID: **014.D**	Analysis Date: **7/31/2008**	SeqNo: **720131**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.285	0.020	0.25	0	114	70	130	0	0		
1,2-Dibromoethane	0.275	0.010	0.25	0	110	70	130	0	0		

Sample ID: **08-5255-01CMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080731A**	Prep Date: **7/31/2008**	Units: **µg/L**
	Batch ID: **16222**	TestNo: **E504.1**	FileID: **016.D**	Analysis Date: **7/31/2008**	SeqNo: **720133**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.206	0.020	1	0	121	65	135	0	0		
1,2-Dibromoethane	1.141	0.010	1	0	114	65	135	0	0		

Qualifiers:

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B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *06-Aug-08*

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS050608

Sample ID: **GB080608**	SampType: **MBLK**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080604**	Analysis Date: **8/6/08**	SeqNo: **722176**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS080608**	SampType: **LCS**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080605**	Analysis Date: **8/6/08**	SeqNo: **722177**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.163	0.016	0.9548	0	122	70	130	0	0		
Ethene	1.293	0.024	0.8913	0	145	70	140	0	0		S
Methane	0.5958	0.0080	0.5094	0	117	70	130	0	0		

Sample ID: **LCSD080608**	SampType: **LCSD**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080606**	Analysis Date: **8/6/08**	SeqNo: **722178**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.209	0.016	0.9548	0	127	70	130	1.163	3.83	30	
Ethene	1.298	0.024	0.8913	0	146	70	140	1.293	0.380	30	S
Methane	0.5936	0.0080	0.5094	0	117	70	130	0.5958	0.372	30	

Sample ID: **08-5612-01GMS**	SampType: **MS**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080617**	Analysis Date: **8/6/08**	SeqNo: **722172**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.139	0.016	0.9548	0	119	70	130	0	0		
Ethene	1.24	0.024	0.8913	0	139	70	140	0	0		
Methane	0.5933	0.0080	0.5094	0.01089	114	70	130	0	0		

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Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS050608

Sample ID: **08-5612-01GMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080618**	Analysis Date: **8/6/08**	SeqNo: **722173**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.187	0.016	0.9548	0	124	70	130	1.139	4.07	30	
Ethene	1.303	0.024	0.8913	0	146	70	140	1.24	4.97	30	S
Methane	0.6073	0.0080	0.5094	0.01089	117	70	130	0.5933	2.33	30	

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X - See case narrative

Evergreen Analytical, Inc.

Date: *31-Jul-08*

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6073008**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/30/2008**	SeqNo: **719755**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

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Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6073008**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/30/2008**	SeqNo: **719755**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

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X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6073008**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/30/2008**	SeqNo: **719755**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	5.31	0	5	0	106	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.11	0	5	0	102	70	130	0	0		

Sample ID: **LCS6073008**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/30/2008**	SeqNo: **719756**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.97	0.50	5	0	99.4	70	130	0	0		
Bromobenzene	5.18	0.50	5	0	104	70	130	0	0		
Bromochloromethane	5.23	0.50	5	0	105	70	130	0	0		
Bromodichloromethane	5.47	0.50	5	0	109	70	130	0	0		
Bromoform	5.2	0.50	5	0	104	70	130	0	0		
Bromomethane	5.33	0.50	5	0	107	70	130	0	0		
n-Butylbenzene	4.76	0.50	5	0	95.2	70	130	0	0		
sec-Butylbenzene	4.76	0.50	5	0	95.2	70	130	0	0		
t-Butylbenzene	4.87	0.50	5	0	97.4	70	130	0	0		
Carbon tetrachloride	5.21	0.50	5	0	104	70	130	0	0		
Chlorobenzene	4.97	0.50	5	0	99.4	70	130	0	0		
Chloroethane	4.68	0.50	5	0	93.6	70	130	0	0		
Chloroform	5.18	0.50	5	0	104	70	130	0	0		
Chloromethane	4.43	0.50	5	0	88.6	70	130	0	0		
2-Chlorotoluene	5.04	0.50	5	0	101	70	130	0	0		
4-Chlorotoluene	4.72	0.50	5	0	94.4	70	130	0	0		
Dibromochloromethane	5.19	0.50	5	0	104	70	130	0	0		
Dibromomethane	5.38	0.50	5	0	108	70	130	0	0		
1,2-Dichlorobenzene	5.11	0.50	5	0	102	70	130	0	0		
1,3-Dichlorobenzene	4.95	0.50	5	0	99	70	130	0	0		
1,4-Dichlorobenzene	4.95	0.50	5	0	99	70	130	0	0		
Dichlorodifluoromethane	5.96	0.50	5	0	119	70	130	0	0		
1,1-Dichloroethane	5.09	0.50	5	0	102	70	130	0	0		
1,2-Dichloroethane	5.17	0.50	5	0	103	70	130	0	0		

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B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCS6073008	SampType: LCS	TestCode: 524	Run ID: VOA-6_080730A	Prep Date: 7/30/2008	Units: µg/L
	Batch ID: R40961	TestNo: E524.2	FileID: 0601006.D	Analysis Date: 7/30/2008	SeqNo: 719756

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	5.14	0.50	5	0	103	70	130	0	0		
cis-1,2-Dichloroethene	5.39	0.50	5	0	108	70	130	0	0		
trans-1,2-Dichloroethene	5.07	0.50	5	0	101	70	130	0	0		
1,2-Dichloropropane	5.35	0.50	5	0	107	70	130	0	0		
1,3-Dichloropropane	5.34	0.50	5	0	107	70	130	0	0		
2,2-Dichloropropane	4.44	0.50	5	0	88.8	70	130	0	0		
1,1-Dichloropropene	4.97	0.50	5	0	99.4	70	130	0	0		
cis-1,3-Dichloropropene	5.33	0.50	5	0	107	70	130	0	0		
trans-1,3-Dichloropropene	4.92	0.50	5	0	98.4	70	130	0	0		
Ethylbenzene	4.98	0.50	5	0	99.6	70	130	0	0		
Hexachlorobutadiene	4.79	0.50	5	0	95.8	70	130	0	0		
Isopropylbenzene	4.36	0.50	5	0	87.2	70	130	0	0		
p-Isopropyltoluene	4.68	0.50	5	0	93.6	70	130	0	0		
Methylene chloride	5.63	0.50	5	0	113	70	130	0	0		
Naphthalene	5.16	0.50	5	0	103	70	130	0	0		
n-Propylbenzene	4.71	0.50	5	0	94.2	70	130	0	0		
Styrene	5.24	0.50	5	0	105	70	130	0	0		
1,1,1,2-Tetrachloroethane	5.43	0.50	5	0	109	70	130	0	0		
1,1,2,2-Tetrachloroethane	5.47	0.50	5	0	109	70	130	0	0		
Tetrachloroethene	4.83	0.50	5	0	96.6	70	130	0	0		
Toluene	4.92	0.50	5	0	98.4	70	130	0	0		
1,2,3-Trichlorobenzene	5.32	0.50	5	0	106	70	130	0	0		
1,2,4-Trichlorobenzene	5.17	0.50	5	0	103	70	130	0	0		
1,1,1-Trichloroethane	5.04	0.50	5	0	101	70	130	0	0		
1,1,2-Trichloroethane	5.61	0.50	5	0	112	70	130	0	0		
Trichloroethene	5.12	0.50	5	0	102	70	130	0	0		
Trichlorofluoromethane	4.71	0.50	5	0	94.2	70	130	0	0		
1,2,3-Trichloropropane	5.54	0.50	5	0	111	70	130	0	0		
1,2,4-Trimethylbenzene	5.08	0.50	5	0	102	70	130	0	0		
1,3,5-Trimethylbenzene	4.99	0.50	5	0	99.8	70	130	0	0		
Vinyl chloride	5.5	0.50	5	0	110	70	130	0	0		

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X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS6073008**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/30/2008**	SeqNo: **719756**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	9.79	0.50	10	0	97.9	70	130	0	0		
o-Xylene	4.8	0.50	5	0	96	70	130	0	0		
1,3-Dichloropropene	10.25	0.50	10	0	103	70	130	0	0		
Xylenes, Total	14.59	0.50	15	0	97.3	70	130	0	0		
Total THM (Summation of above)	21.04	0.50	20	0	105	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	5.32	0	5	0	106	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.31	0	5	0	106	70	130	0	0		

Sample ID: **LCSD6073008**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **2001020.D**	Analysis Date: **7/30/2008**	SeqNo: **719770**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.77	0.50	5	0	95.4	70	130	4.97	4.11	30	
Bromobenzene	4.87	0.50	5	0	97.4	70	130	5.18	6.17	30	
Bromochloromethane	4.69	0.50	5	0	93.8	70	130	5.23	10.9	30	
Bromodichloromethane	4.89	0.50	5	0	97.8	70	130	5.47	11.2	30	
Bromoform	4.35	0.50	5	0	87	70	130	5.2	17.8	30	
Bromomethane	3.98	0.50	5	0	79.6	70	130	5.33	29.0	30	
n-Butylbenzene	4.59	0.50	5	0	91.8	70	130	4.76	3.64	30	
sec-Butylbenzene	4.64	0.50	5	0	92.8	70	130	4.76	2.55	30	
t-Butylbenzene	4.73	0.50	5	0	94.6	70	130	4.87	2.92	30	
Carbon tetrachloride	4.94	0.50	5	0	98.8	70	130	5.21	5.32	30	
Chlorobenzene	4.77	0.50	5	0	95.4	70	130	4.97	4.11	30	
Chloroethane	4.65	0.50	5	0	93	70	130	4.68	0.643	30	
Chloroform	4.87	0.50	5	0	97.4	70	130	5.18	6.17	30	
Chloromethane	4.14	0.50	5	0	82.8	70	130	4.43	6.77	30	
2-Chlorotoluene	4.91	0.50	5	0	98.2	70	130	5.04	2.61	30	
4-Chlorotoluene	4.51	0.50	5	0	90.2	70	130	4.72	4.55	30	
Dibromochloromethane	4.6	0.50	5	0	92	70	130	5.19	12.1	30	
Dibromomethane	4.87	0.50	5	0	97.4	70	130	5.38	9.95	30	
1,2-Dichlorobenzene	4.74	0.50	5	0	94.8	70	130	5.11	7.51	30	

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCSD6073008**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **2001020.D**	Analysis Date: **7/30/2008**	SeqNo: **719770**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	4.65	0.50	5	0	93	70	130	4.95	6.25	30	
1,4-Dichlorobenzene	4.47	0.50	5	0	89.4	70	130	4.95	10.2	30	
Dichlorodifluoromethane	5.71	0.50	5	0	114	70	130	5.96	4.28	30	
1,1-Dichloroethane	4.8	0.50	5	0	96	70	130	5.09	5.86	30	
1,2-Dichloroethane	4.78	0.50	5	0	95.6	70	130	5.17	7.84	30	
1,1-Dichloroethene	4.91	0.50	5	0	98.2	70	130	5.14	4.58	30	
cis-1,2-Dichloroethene	5	0.50	5	0	100	70	130	5.39	7.51	30	
trans-1,2-Dichloroethene	4.89	0.50	5	0	97.8	70	130	5.07	3.61	30	
1,2-Dichloropropane	4.97	0.50	5	0	99.4	70	130	5.35	7.36	30	
1,3-Dichloropropane	4.97	0.50	5	0	99.4	70	130	5.34	7.18	30	
2,2-Dichloropropane	4.14	0.50	5	0	82.8	70	130	4.44	6.99	30	
1,1-Dichloropropene	4.75	0.50	5	0	95	70	130	4.97	4.53	30	
cis-1,3-Dichloropropene	4.69	0.50	5	0	93.8	70	130	5.33	12.8	30	
trans-1,3-Dichloropropene	4.33	0.50	5	0	86.6	70	130	4.92	12.8	30	
Ethylbenzene	4.76	0.50	5	0	95.2	70	130	4.98	4.52	30	
Hexachlorobutadiene	4.63	0.50	5	0	92.6	70	130	4.79	3.40	30	
Isopropylbenzene	4.19	0.50	5	0	83.8	70	130	4.36	3.98	30	
p-Isopropyltoluene	4.5	0.50	5	0	90	70	130	4.68	3.92	30	
Methylene chloride	5.44	0.50	5	0	109	70	130	5.63	3.43	30	
Naphthalene	4.78	0.50	5	0	95.6	70	130	5.16	7.65	30	
n-Propylbenzene	4.64	0.50	5	0	92.8	70	130	4.71	1.50	30	
Styrene	4.92	0.50	5	0	98.4	70	130	5.24	6.30	30	
1,1,1,2-Tetrachloroethane	4.91	0.50	5	0	98.2	70	130	5.43	10.1	30	
1,1,2,2-Tetrachloroethane	4.86	0.50	5	0	97.2	70	130	5.47	11.8	30	
Tetrachloroethene	4.68	0.50	5	0	93.6	70	130	4.83	3.15	30	
Toluene	4.75	0.50	5	0	95	70	130	4.92	3.52	30	
1,2,3-Trichlorobenzene	4.95	0.50	5	0	99	70	130	5.32	7.21	30	
1,2,4-Trichlorobenzene	4.72	0.50	5	0	94.4	70	130	5.17	9.10	30	
1,1,1-Trichloroethane	4.88	0.50	5	0	97.6	70	130	5.04	3.23	30	
1,1,2-Trichloroethane	5.11	0.50	5	0	102	70	130	5.61	9.33	30	
Trichloroethene	4.9	0.50	5	0	98	70	130	5.12	4.39	30	

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5431
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCSD6073008**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080730A**	Prep Date: **7/30/2008**	Units: **µg/L**
	Batch ID: **R40961**	TestNo: **E524.2**	FileID: **2001020.D**	Analysis Date: **7/30/2008**	SeqNo: **719770**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	4.55	0.50	5	0	91	70	130	4.71	3.46	30	
1,2,3-Trichloropropane	5.05	0.50	5	0	101	70	130	5.54	9.25	30	
1,2,4-Trimethylbenzene	4.87	0.50	5	0	97.4	70	130	5.08	4.22	30	
1,3,5-Trimethylbenzene	4.71	0.50	5	0	94.2	70	130	4.99	5.77	30	
Vinyl chloride	5.32	0.50	5	0	106	70	130	5.5	3.33	30	
m,p-Xylene	9.37	0.50	10	0	93.7	70	130	9.79	4.38	30	
o-Xylene	4.56	0.50	5	0	91.2	70	130	4.8	5.13	30	
1,3-Dichloropropene	9.02	0.50	10	0	90.2	70	130	10.25	12.8	30	
Xylenes, Total	13.93	0.50	15	0	92.9	70	130	14.59	4.63	30	
Total THM (Summation of above)	18.71	0.50	20	0	93.6	70	130	21.04	11.7	30	
Surr: 1,2-Dichlorobenzene-d4	4.89	0	5	0	97.8	70	130	0	0	0	
Surr: 4-Bromofluorobenzene	4.97	0	5	0	99.4	70	130	0	0	0	

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical Laboratory

August 25, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-5431
Client Project ID:

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

WORK ORDER Summary Evergreen Analytical, Inc. 08-5019

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Fax To: Tom Melland **FX:** (719) 742-5571
Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

7/31/2008 10:30:03 AM

Client Project ID: Petroglyph wells

QC Level: LEVEL I+

Comments: PDF and EDD in Pinery

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-5019-01A	Inj 06 PT	Water	7/15/08 1050	7/16/08	RAD226/228	Radium 226/228	☐	☐	7/30/08	1/11/09
08-5019-01B	Inj 06 PT	Water	7/15/08 1050	7/16/08	ALBETA	Gross Alpha-Beta	☐	☐	7/30/08	1/11/09
08-5019-01B	Inj 06 PT	Water	7/15/08 1050	7/16/08	TS_SUB	Total Solids for Gross A B	☐	☐	7/30/08	7/22/08
08-5019-01C	Inj 06 PT	Water	7/15/08 1050	7/16/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	7/30/08	7/17/08
08-5019-01D	Inj 06 PT	Water	7/15/08 1050	7/16/08	F_W	Fluoride	☐	☐	7/30/08	8/12/08
08-5019-01E	Inj 06 PT	Water	7/15/08 1050	7/16/08	200.8_TR *	200.8: Total Metals	☐	☐	7/30/08	1/11/09
08-5019-01E	Inj 06 PT	Water	7/15/08 1050	7/16/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	7/30/08	8/12/08
08-5019-01F	Inj 06 PT	Water	7/15/08 1050	7/16/08	504 *	504: Standard List	☐	☐	7/30/08	7/29/08
08-5019-01G	Inj 06 PT	Water	7/15/08 1050	7/16/08	MEEP_W *	RSK175M: MEE	☐	☐	7/30/08	7/29/08
08-5019-01H	Inj 06 PT	Water	7/15/08 1050	7/16/08	524 *	524.2: Standard List	☐	☐	7/30/08	7/29/08
08-5019-01H	Inj 06 PT	Water	7/15/08 1050	7/16/08	VOATICS	VOA TICS (Largest 10)	☐	☐	7/30/08	7/29/08
08-5019-01I	Inj 06 PT	Water	7/15/08 1050	7/16/08	CN_TW	Total Cyanide	☐	☐	7/30/08	7/29/08
08-5019-01J	Inj 06 PT	Water	7/15/08 1050	7/16/08	SULF_W	Total Sulfide	☐	☐	7/30/08	7/22/08
08-5019-01K	Inj 06 PT	Water	7/15/08 1050	7/16/08	ALK_WGRP *	Alkalinity	☐	☐	7/30/08	7/29/08
08-5019-01K	Inj 06 PT	Water	7/15/08 1050	7/16/08	PH_W	Discharge Water pH	☐	☐	7/30/08	7/15/08
08-5019-01K	Inj 06 PT	Water	7/15/08 1050	7/16/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	7/30/08	7/22/08
08-5019-01K	Inj 06 PT	Water	7/15/08 1050	7/16/08	TSS	Total Suspended Solids (TSS)	☐	☐	7/30/08	7/22/08

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Evergreen Analytical Laboratory Inc.

Page 1 of 1

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City LaVeta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☑ PDF ☑ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City LaVeta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571
Project ID# Petroglyph Wells
P.O. _____ Quote 1165
Sampler TWM

NOTE: Identify Known Hazards Below

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.

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	Radium 226/228	Gross Alpha-Beta	300.0: DW Anions by IC	Fluoride	200.8: Drinking Water 11 Regulated	Total Solids for Gross A B	504.1 EDB/DBCP	RSKSOP-175M	VOA TICS	Total Cyanide	Total Sulfide	TDS, TSS, pH	ANALYSES (check anaylsis)	For Laboratory Use Only
Inj 06 PT	7-15-08	*					4	1	1	1	1	1	2	3	3	1	1	1	← # Bottles	61
	10:50-11:00																			
Water out of valve was milky which appeared to be entrained fine gas bubbles																				
																				CN pH >12 metals pH<2

W.O. # 08-5019
B.O.F. # 25390
C/S (O) 1673 / UPS
C/S (I) 1673 / UPS
Temp. °C 5-7 / Ice
Seals Present Y / N / NA
Samples Pres Y / N / NA
Headspace Y / N / NA
By MO

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

A	B	C	D	E	B	F	G	H	I	J	K

Sample Fraction

Instructions: 2 - coolers 1 of 2

** **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
[signature]	7-15-08 13:00					[signature]	7/16/8 1030A

Evergreen Analytical, Inc.

Date: *15-Aug-08*

Lab Order: 08-5019
Client Project ID Petroglyph wells

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 5.7 °C.
Sample(s) were received in good condition, in the proper container, and within holding times.
The pH sample was received out of holding time.
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 (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of RCRA samples meet the requirements of NELAC and Utah Rule R444-14 unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained. CMS

CLIENT SERVICES

There are no anomalies to report. EKH

GENERAL CHEMISTRY

The Fluoride result exceeded the drinking water MCL (4.0 mg/L).
The pH required analysis out of holding time (H).
There are no other anomalies to report. BP/CMS

METALS ANALYSIS

Zinc was detected in the method blank (MB) for the 200.8 total metals at 0.016 mg/L. This amount was not subtracted from the sample result.
Matrix spike and matrix spike duplicate (MS/MSD) recoveries for sodium are outside the QC limits due to the high concentration of sodium in the sample versus the low concentration of the spike. All laboratory control spike (LCS) recoveries are within QC limits, showing the analysis is in control.
There are no other anomalies to report. WKH/CMS

GAS CHROMATOGRAPHY

Method RSK175M: The laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) recovery for Ethene is 2 % above the QC limits. Since the bias is high and the sample is non-detect for

Evergreen Analytical, Inc.

Date: *15-Aug-08*

Lab Order: 08-5019
Client Project ID Petroglyph wells

CASE NARRATIVE

Ethene, no further action is required. There are no other anomalies to report. MDS
Method 504.1: There are no anomalies to report. AE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: There are no anomalies to report. DC

005

AUG 14 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 7932

WorkOrder: 08-5019

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

16-Jul-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests						
				ALPHABETA	RAD226|228 (4)	TS				
08-5019-01A	Water	7/15/2008 10:50:00 AM	1LPHNO3		1					
08-5019-01B	Water	7/15/2008 10:50:00 AM	1LPHNO3	1		1				

Comments:

Relinquished by:	[signature]	**Date/Time** 7-14-04 2:25PM	**Received by:**	[signature]	**Date/Time** 7/16/08 1425
Relinquished by:			**Received by:**		

AUG 14 2008

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 13, 2008
HRI PROJECT	009-93
HRI SERIES NO	G362/08
DATE REC'D.	7/18/2008
CUST. P.O.#	7932

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G362/08-1

SAMPLE IDENTIFICATION: 08-5019-01A, B - sampled on 07/15/2008 @ 1050

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	1.1(+-2.1)	1.8	SM 7110 B	8/12/2008 @ 0615	EDF
Gross Beta (+-Precision*), pCi/l (T)	2.9(+-2.2)	2.0	SM 7110 B	8/12/2008 @ 0615	EDF
Radium-226 (+-Precision*), pCi/l (T)	0.2(+-0.4)	0.2	SM 7500-Ra B	7/30/2008 @ 1130	AN
Radium-228 (+-Precision*), pCi/l (T)	0.2(+-0.7)	0.7	EPA Ra-05	7/30/2008 @ 1449	RG/AN
Total Solids, mg/l	270	10	EPA 160.3	7/25/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808;
NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 06 PT
Client Project ID: Petroglyph wells
Date Collected: 7/15/08 1050
Date Received: 7/16/08

Lab Work Order: 08-5019
Lab Sample ID: 08-5019-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 7/16/08
Date Analyzed: 7/16/08 1424
Lab File ID: 25
Method Blank: MB 071608
Dilution Factor: 1
Lab Fraction ID: 08-5019-01C

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	37.0	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	0.350	0.20	mg/L
Nitrate-N		U	0.045	mg/L

Date Prepared: 7/16/08
Date Analyzed: 7/16/08 1830
Lab File ID: 26
Method Blank: MB 071608
Dilution Factor: 5
Lab Fraction ID: 08-5019-01C

Analytes	CAS Number	Result	LQL	Units
Sulfate	7778-80-2	47.6	2.5	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/17/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 06 PT
Client Project ID: Petroglyph wells
Date Collected: 7/15/08 1050
Date Received: 7/16/08

Lab Work Order 08-5019
Lab Sample ID: 08-5019-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 7/18/08 **Lab File ID:** 5 **Dilution Factor:** 1
Date Analyzed: 7/18/08 **Method Blank:** MBLK 07/18/08 **Lab Fraction ID:** 08-5019-01K

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		96.2	5.0	mg/L CaCO3
Bicarbonate		77.1	5.0	mg/L CaCO3
Carbonate		19.1	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 7/22/08 **Lab File ID:** 49 **Dilution Factor:** 1
Date Analyzed: 7/22/08 **Method Blank:** MBLK 7/22/08 **Lab Fraction ID:** 08-5019-01I

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 7/21/08 **Lab File ID:** 54 **Dilution Factor:** 1
Date Analyzed: 7/21/08 **Method Blank:** MBLK 7/21/07 **Lab Fraction ID:** 08-5019-01D

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	7.9 *	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 7/16/08 **Dilution Factor:** 1
Date Analyzed: 7/16/08 1225 **Lab Fraction ID:** 08-5019-01K

Analytes	CAS Number	Result	LQL	Units
pH		9.27 H	1.00	pH Units

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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/23/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 06 PT
Client Project ID: Petroglyph wells
Date Collected: 7/15/08 1050
Date Received: 7/16/08

Lab Work Order 08-5019
Lab Sample ID: 08-5019-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 7/21/08 **Lab File ID:** 74 **Dilution Factor:** 1
Date Analyzed: 7/21/08 **Method Blank:** MBLK 07/21/08 **Lab Fraction ID:** 08-5019-01J

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 7/17/08 **Lab File ID:** 17 **Dilution Factor:** 1
Date Analyzed: 7/17/08 **Method Blank:** MBLK 7/17/08 **Lab Fraction ID:** 08-5019-01K

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		285	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 7/18/08 **Lab File ID:** 9 **Dilution Factor:** 1
Date Analyzed: 7/18/08 **Method Blank:** MBLK 07/18/08 **Lab Fraction ID:** 08-5019-01K

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		33.5	5.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/23/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 06 PT
Client Project ID: Petroglyph wells
Date Collected: 7/15/08
Date Received: 7/16/08

Lab Work Order 08-5019
Lab Sample ID: 08-5019-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 7/23/08
Date Analyzed: 7/24/08
Lab File ID: 080724A.B\035SMPL.D
Method Blank: MB-16153
Dilution Factor: 1
Lab Fraction ID: 08-5019-01E

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.0388	0.0100	mg/L
Beryllium	7440-41-7	U	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	3.35	0.400	mg/L
Chromium	7440-47-3	0.00485	0.00220	mg/L
Copper	7440-50-8	U	0.0100	mg/L
Iron	7439-89-6	3.18	0.200	mg/L
Lead	7439-92-1	0.00210	0.00100	mg/L
Magnesium	7439-95-4	0.583	0.0500	mg/L
Manganese	7439-96-5	0.0585	0.00500	mg/L
Molybdenum	7439-98-7	U	0.00500	mg/L
Nickel	7440-02-0	U	0.0100	mg/L
Potassium	7440-09-7	0.726	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	88.8	0.500	mg/L
Strontium	7440-24-6	U	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.0281 B	0.00500	mg/L

MC
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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/25/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 06 PT
Client Project ID: Petroglyph wells
Date Collected: 7/15/08
Date Received: 7/16/08

Lab Work Order 08-5019
Lab Sample ID: 08-5019-01
Sample Matrix: Water

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 7/17/08
Date Analyzed: 7/17/08
Lab File ID: 71708
Method Blank: MB-16078
Dilution Factor: 1
Lab Fraction ID: 08-5019-01E

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/25/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 06 PT	**Lab Work Order:**	08-5019
Client Project ID:	Petroglyph wells	**Lab Sample ID:**	08-5019-01F
Date Collected:	7/15/2008	**Sample Matrix:**	Water
Date Received:	7/16/2008	**Lab File ID:**	015.D
Date Prepared:	7/23/2008	**Method Blank:**	MB-16140
Date Analyzed:	7/23/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

AE
Analyst

Approved

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/24/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 06 PT	**Lab Work Order**	08-5019
Client Project ID:	Petroglyph wells	**Lab Sample ID:**	08-5019-01G
Date Collected:	7/15/08	**Sample Matrix:**	Water
Date Received:	7/16/08	**Lab File ID:**	GAS072118
Date Prepared:	7/21/08	**Method Blank:**	GB072108
Date Analyzed:	7/21/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	10.00

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

Units: mg/L

Analytes	CAS Number	Result	LQL
Methane	74-82-8	6.3	0.0080

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/22/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 06 PT	**Lab Work Order**	08-5019
Client Project ID:	Petroglyph wells	**Lab Sample ID:**	08-5019-01G
Date Collected:	7/15/08	**Sample Matrix:**	Water
Date Received:	7/16/08	**Lab File ID:**	GAS072117
Date Prepared:	7/21/08	**Method Blank:**	GB072108
Date Analyzed:	7/21/08	**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
Ethane	74-84-0	0.0039	0.0016
Ethene	74-85-1	U	0.0024

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/22/08

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 06 PT	**Lab Work Order:**	08-5019
Client Project ID:	Petroglyph wells	**Lab Sample ID:**	08-5019-01H
Date Collected:	7/15/2008	**Sample Matrix:**	Water
Date Received:	7/16/2008	**Lab File ID:**	\VOA40716\2001020.D
Date Prepared:	7/16/2008	**Method Blank:**	MB4071608a
Date Analyzed:	7/16/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**

B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/18/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 06 PT	**Lab Work Order:**	08-5019
Client Project ID:	Petroglyph wells	**Lab Sample ID:**	08-5019-01H
Date Collected:	7/15/2008	**Sample Matrix:**	Water
Date Received:	7/16/2008	**Lab File ID:**	\VOA40716\2001020.D
Date Prepared:	7/16/2008	**Method Blank:**	MB4071608a
Date Analyzed:	7/16/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	U		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	101	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	99	**QC Limits:**	70-130 %REC

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
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J - Estimated value below the LQL

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

Print Date: 7/18/2008

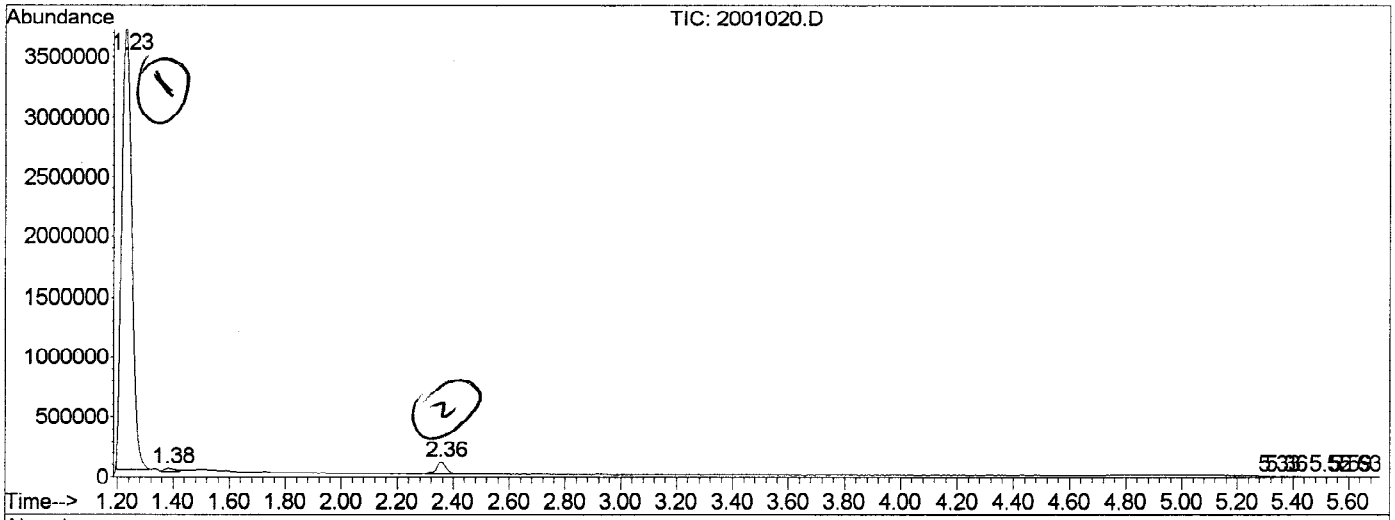
Tentatively Identified Compound (LSC) summary

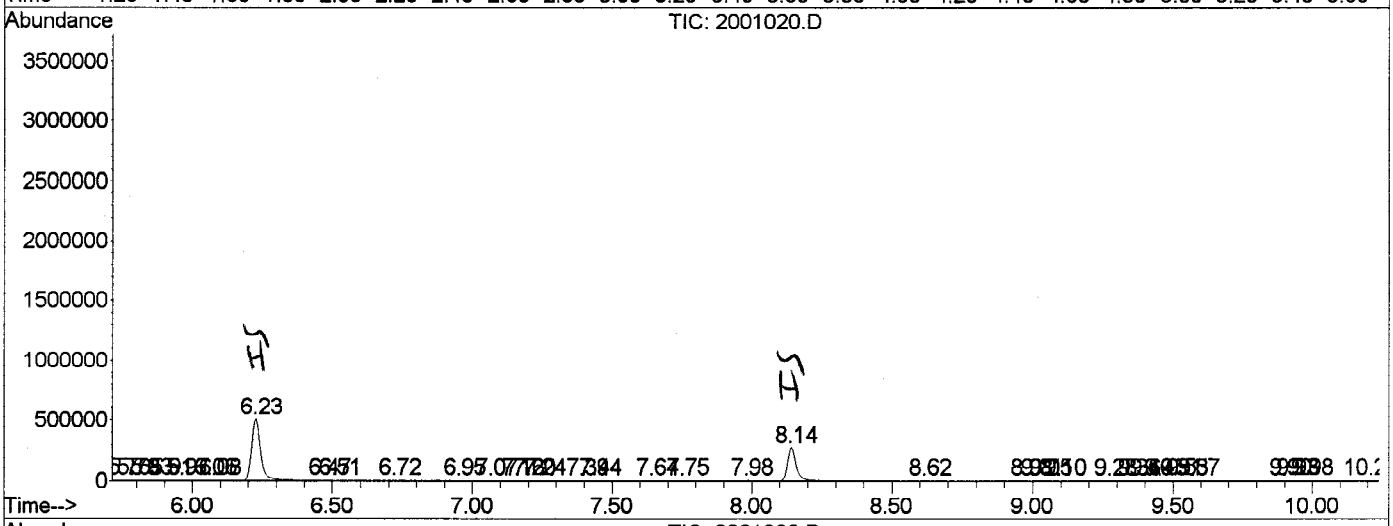
perator ID: Don Chamot Date Acquired: 16 Jul 2008 11:32 pm
ata File: C:\MSDCHEM\1\DATA\VOA40716\2001020.D
ame: 08-5019-01H
isc: SAMP 524
ethod: C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
itle: VOA4 524.2 Revision 4.1
ibrary Searched: C:\DATABASE\NIST98.L

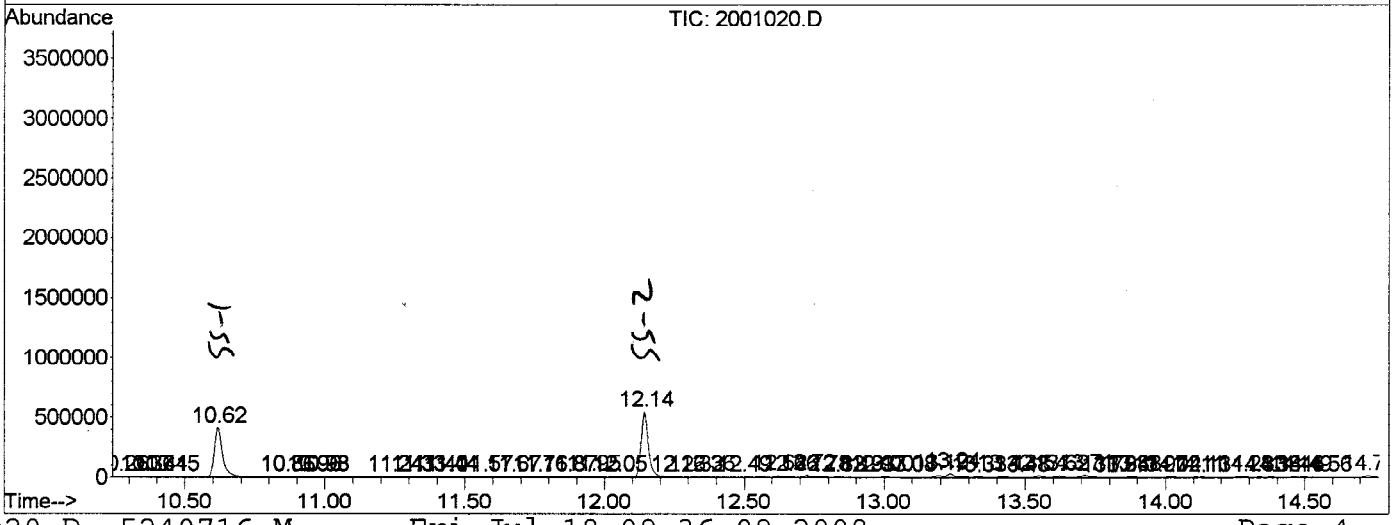
TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	Internal Standard RT	Internal Standard Resp	Internal Standard Conc
arbon dioxide	1.23	41.9	ug/l	9278420	1	6.23	1107050	5.0
cetone	2.36	1.1	ug/l	250202	1	6.23	1107050	5.0

LSC Report - Integrated Chromatogram

File : C:\MSDCHEM\1\DATA\VOA40716\2001020.D
Operator : Don Chamot
Acquired : 16 Jul 2008 11:32 pm using AcqMethod 5242BASE
Instrument : Instrumen
Sample Name: 08-5019-01H
Misc Info : SAMP 524
Vial Number: 20
Quant File :5240716.RES (RTE Integrator)







Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40716\2001020.D Vial: 20
Acq On : 16 Jul 2008 11:32 pm Operator: Don Chamot
Sample : 08-5019-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

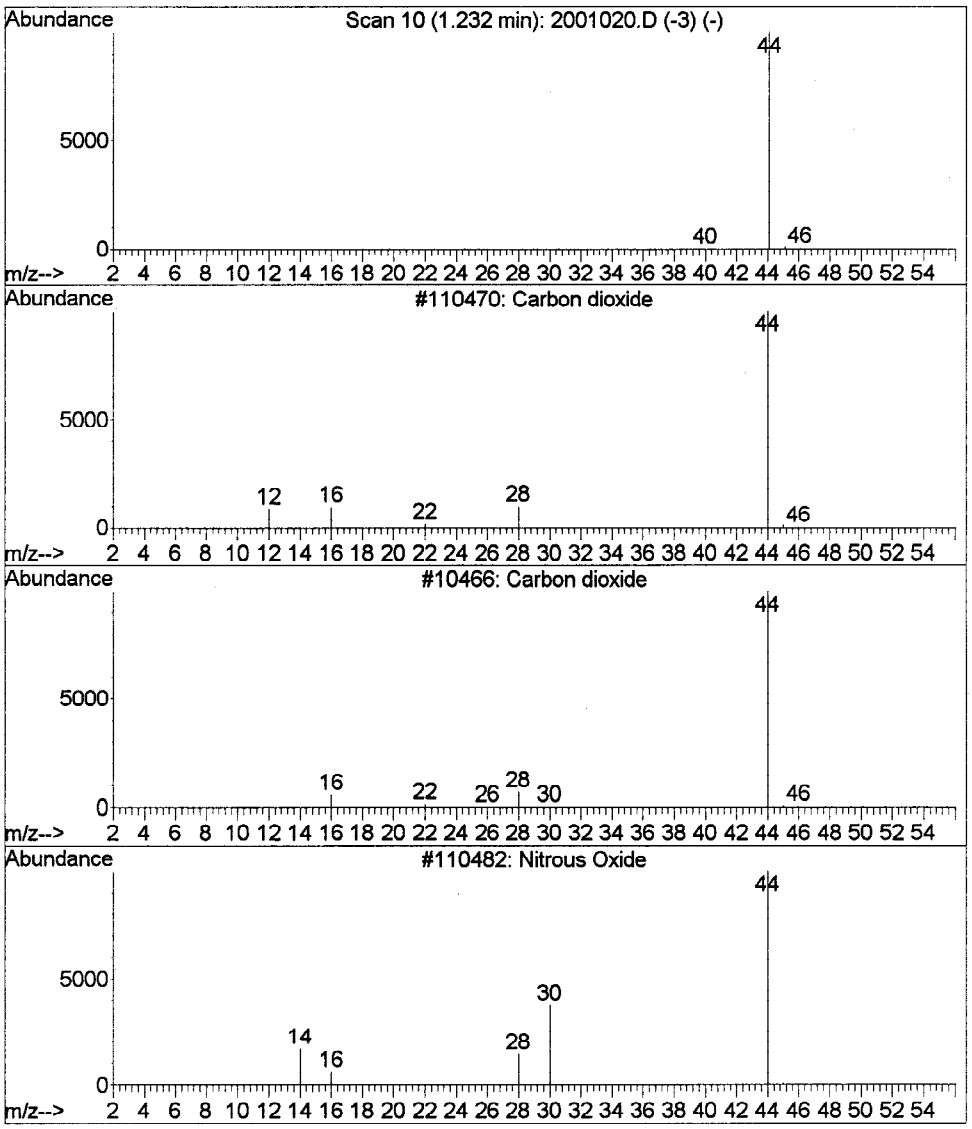
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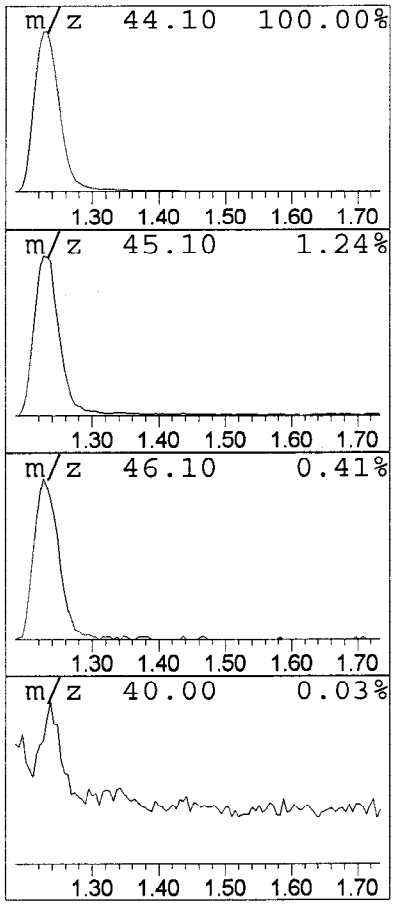
Peak Number 1 Carbon dioxide Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.23	41.91 ug/l	9278420	Fluorobenzene (IS-1)	6.23

(1)

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Carbon dioxide	44	CO2	000124-38-9	4
2	Carbon dioxide	44	CO2	000124-38-9	4
3	Nitrous Oxide	44	N2O	010024-97-2	3
4	Nitrous Oxide	44	N2O	010024-97-2	3





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40716\2001020.D Vial: 20
Acq On : 16 Jul 2008 11:32 pm Operator: Don Chamot
Sample : 08-5019-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

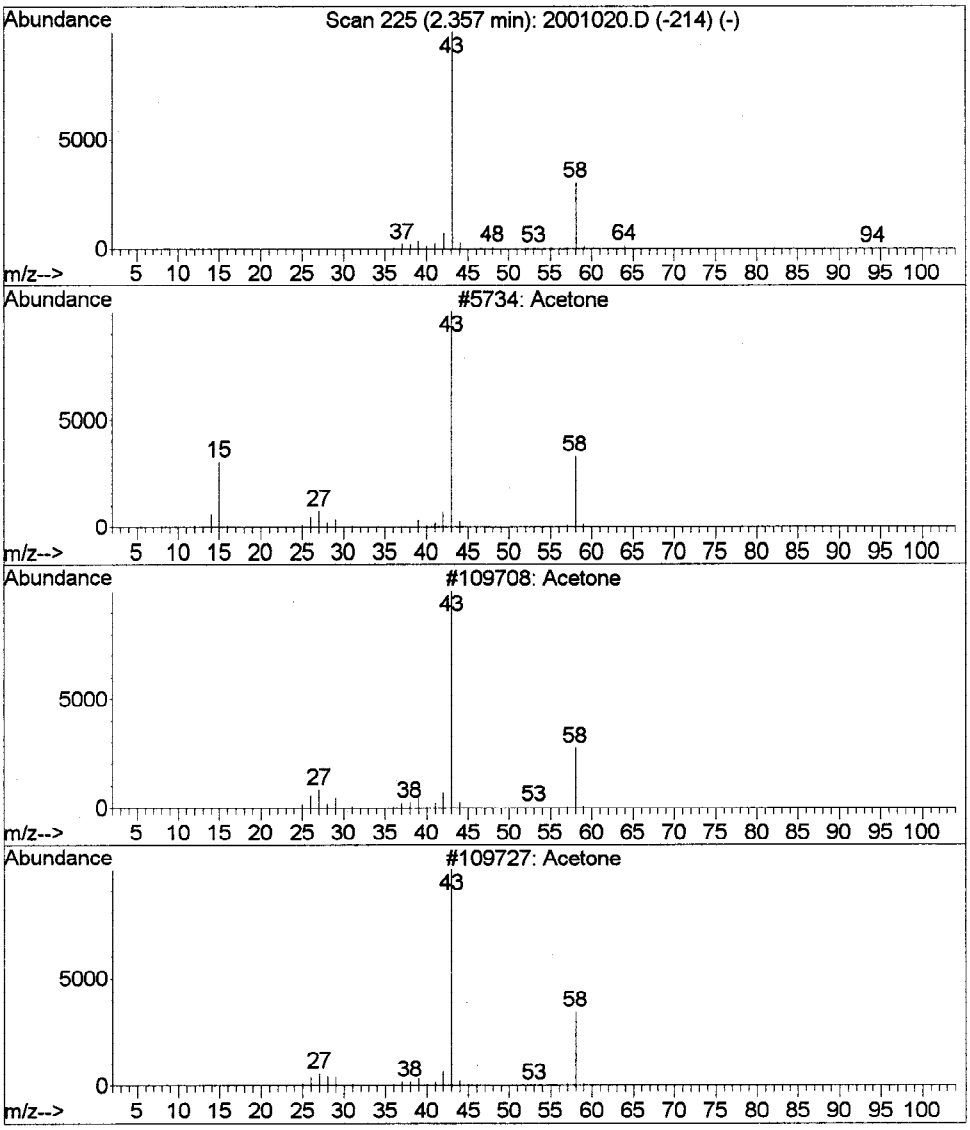
Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

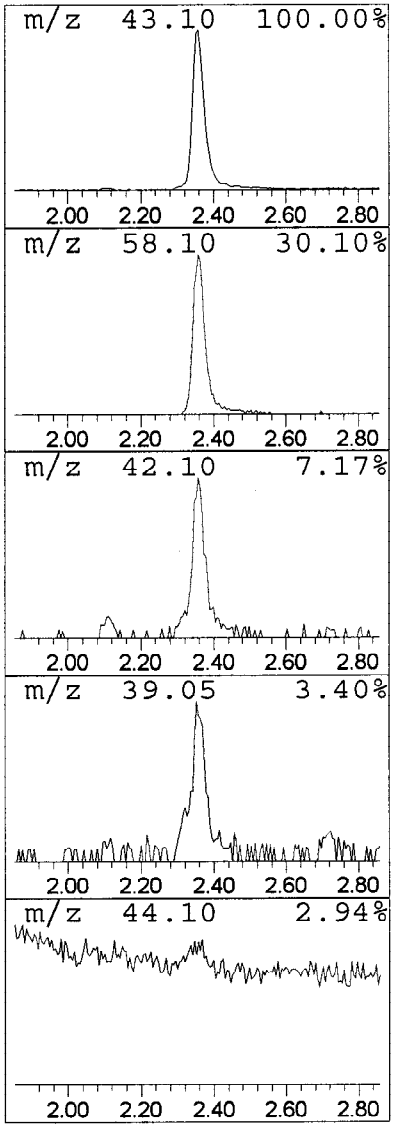
****

Peak Number 2 Acetone Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.36	1.13 ug/l	250202	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Acetone	58	C3H6O	000067-64-1	64
2	Acetone	58	C3H6O	000067-64-1	64
3	Acetone	58	C3H6O	000067-64-1	47
4	Acetone	58	C3H6O	000067-64-1	64





QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: R40630

Sample ID: LCS	SampType: LCS	TestCode: anions_nond	Run ID: IC-2000_080716A	Prep Date: 7/16/2008	Units: mg/L
	Batch ID: R40630	TestNo: E300.0	FileID: 32	Analysis Date: 7/16/2008	SeqNo: 713470

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	20.2	1.0	20	0	101	90	110	0	0		
Nitrite-N	6.495	0.12	6.09	0	107	90	110	0	0		
Bromide	20.92	0.40	20	0	105	90	110	0	0		
Nitrate-N	4.605	0.090	4.518	0	102	90	110	0	0		
Sulfate	31.58	1.0	30	0	105	90	110	0	0		

Sample ID: MB 071608	SampType: MBLK	TestCode: anions_w	Run ID: IC-2000_080716A	Prep Date: 7/16/2008	Units: mg/L
	Batch ID: R40630	TestNo: E300.0	FileID: 5	Analysis Date: 7/16/2008	SeqNo: 713468

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0	0.50									
Nitrite-N	0	0.0040									
Bromide	0	0.050									
Nitrate-N	0	0.010									
Sulfate	0	0.50									

Sample ID: LCS	SampType: LCS	TestCode: anions_w	Run ID: IC-2000_080716A	Prep Date: 7/16/2008	Units: mg/L
	Batch ID: R40630	TestNo: E300.0	FileID: 33	Analysis Date: 7/16/2008	SeqNo: 713469

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	19.36	2.5	20	0	96.8	90	110	0	0		
Nitrite-N	6.249	0.020	6.09	0	103	90	110	0	0		
Bromide	20.22	0.25	20	0	101	90	110	0	0		
Nitrate-N	4.468	0.050	4.518	0	98.9	90	110	0	0		
Sulfate	30.2	2.5	30	0	101	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *23-Jul-08*

Work Order: 08-5019

Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 07/18/08**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080718A**	Prep Date: **7/18/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40665**	TestNo: **SM2320B**	FileID: **1**	Analysis Date: **7/18/2008**	SeqNo: **714111**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080718A**	Prep Date: **7/18/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40665**	TestNo: **SM2320B**	FileID: **2**	Analysis Date: **7/18/2008**	SeqNo: **714112**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	100.7	5.0	100	0	101	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019

Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 7/22/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080722B**	Prep Date: **7/22/2008**	Units: **mg/L**
	Batch ID: **R40737**	TestNo: **SM4500-CN**	FileID: **47**	Analysis Date: **7/22/2008**	SeqNo: **715426**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080722B**	Prep Date: **7/22/2008**	Units: **mg/L**
	Batch ID: **R40737**	TestNo: **SM4500-CN**	FileID: **48**	Analysis Date: **7/22/2008**	SeqNo: **715428**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.1028	0.010	0.104	0	98.8	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID **MBLK 7/21/07**	SampType: **MBLK**	TestCode: **F_W**	Run ID: **F_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40687**	TestNo: **SM 4500-F C**	FileID: **47**	Analysis Date: **7/21/2008**	SeqNo: **714534**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID **LCS**	SampType: **LCS**	TestCode: **F_W**	Run ID: **F_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40687**	TestNo: **SM 4500-F C**	FileID: **48**	Analysis Date: **7/21/2008**	SeqNo: **714535**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	10.03	0.20	10	0	100	95	105	0	0		

Qualifiers:

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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID **LCS-R40592**	SampType: **LCS**	TestCode: **PH_W**	Run ID: **PH_080716B**	Prep Date: **7/16/2008**	Units: **pH Units**
	Batch ID: **R40592**	TestNo: **SM 4500H+ B**	FileID:	Analysis Date: **7/16/2008**	SeqNo: **712693**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.02	1.00	8	0	100	99.3	100.7	0	0		

Qualifiers:

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R - RPD outside acceptance limits
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X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 07/21/08**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080721B**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40703**	TestNo: **SM 4500-S C/**	FileID: **72**	Analysis Date: **7/21/2008**	SeqNo: **714833**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080721B**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **R40703**	TestNo: **SM 4500-S C/**	FileID: **73**	Analysis Date: **7/21/2008**	SeqNo: **714834**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.5	0.50	1.7	0	88.2	60	120	0	0		

Qualifiers:

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R - RPD outside acceptance limits
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H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK 7/17/08**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080717A**	Prep Date: **7/17/2008**	Units: **mg/L**
	Batch ID: **R40663**	TestNo: **SM 2540C**	FileID: **47**	Analysis Date: **7/17/2008**	SeqNo: **714080**

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_080717A**	Prep Date: **7/17/2008**	Units: **mg/L**
	Batch ID: **R40663**	TestNo: **SM 2540C**	FileID: **48**	Analysis Date: **7/17/2008**	SeqNo: **714081**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	406	10.0	400	0	102	90	110	0	0		

Qualifiers:

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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 07/18/08**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080718A**	Prep Date: **7/18/2008**	Units: **mg/L**
	Batch ID: **R40667**	TestNo: **SM 2540 D**	FileID: **1**	Analysis Date: **7/18/2008**	SeqNo: **714134**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080718A**	Prep Date: **7/18/2008**	Units: **mg/L**
	Batch ID: **R40667**	TestNo: **SM 2540 D**	FileID: **2**	Analysis Date: **7/18/2008**	SeqNo: **714135**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	295	5.0	300	0	98.3	90	110	0	0		

Qualifiers:

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J - Analyte detected below quantitation limits
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R - RPD outside acceptance limits
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H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16153

Sample ID: MB-16153	SampType: MBLK	TestCode: 200.8_TR	Run ID: ICPMS_080724A	Prep Date: 7/23/2008	Units: mg/L
	Batch ID: 16153	TestNo: E200.8	FileID: 080724A.B\032SMPL.D	Analysis Date: 7/24/2008	SeqNo: 716912

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	U	0.00200									
Arsenic	U	0.00200									
Barium	U	0.0100									
Beryllium	U	0.00100									
Boron	U	0.200									
Cadmium	U	0.000500									
Calcium	U	0.400									
Chromium	U	0.00220									
Copper	U	0.0100									
Iron	U	0.200									
Lead	U	0.00100									
Magnesium	U	0.0500									
Manganese	U	0.00500									
Molybdenum	U	0.00500									
Nickel	U	0.0100									
Potassium	U	0.125									
Selenium	U	0.00200									
Silver	U	0.000200									
Sodium	U	0.500									
Strontium	U	0.0980									
Thallium	U	0.00100									
Zinc	0.016	0.00500									

Sample ID: LCS-16153	SampType: LCS	TestCode: 200.8_TR	Run ID: ICPMS_080724A	Prep Date: 7/23/2008	Units: mg/L
	Batch ID: 16153	TestNo: E200.8	FileID: 080724A.B\033SMPL.D	Analysis Date: 7/24/2008	SeqNo: 716913

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.01029	0.00200	0.01	0	103	85	115	0	0		
Arsenic	0.104	0.00200	0.1	0	104	85	115	0	0		
Barium	0.0947	0.0100	0.1	0.001455	94.7	85	115	0	0		
Beryllium	0.01005	0.00100	0.01	0	101	85	115	0	0		

Qualifiers:

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B - Analyte detected in the associated Method Blank
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X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16153

Sample ID: **LCS-16153**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080724A**	Prep Date: **7/23/2008**	Units: **mg/L**
	Batch ID: **16153**	TestNo: **E200.8**	FileID: **080724A.B\033SMPL.D**	Analysis Date: **7/24/2008**	SeqNo: **716913**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron	0.9935	0.200	1	0.0122	99.4	85	115	0	0		
Cadmium	0.01018	0.000500	0.01	0	102	85	115	0	0		
Calcium	1.117	0.400	1	0.1493	112	85	115	0	0		
Chromium	0.1041	0.00220	0.1	0.0006625	104	85	115	0	0		
Copper	0.1044	0.0100	0.1	0.00516	104	85	115	0	0		
Iron	1.014	0.200	1	0.03163	101	85	115	0	0		
Lead	0.02038	0.00100	0.02	0.000859	102	85	115	0	0		
Magnesium	1.001	0.0500	1	0	100	85	115	0	0		
Manganese	0.2054	0.00500	0.2	0.0004817	103	85	115	0	0		
Molybdenum	0.097	0.00500	0.1	0	97	85	115	0	0		
Nickel	0.09685	0.0100	0.1	0.0007405	96.9	85	115	0	0		
Potassium	0.9965	0.125	1	0	99.7	85	115	0	0		
Selenium	0.02292	0.00200	0.02	0	115	85	115	0	0		
Silver	0.00986	0.000200	0.01	0.000049	98.6	85	115	0	0		
Sodium	1.084	0.500	1	0.0852	108	85	115	0	0		
Strontium	U	0.0980	0.1	0	96.4	85	115	0	0		
Thallium	0.004973	0.00100	0.005	0	99.5	85	115	0	0		
Zinc	0.2314	0.00500	0.2	0.016	108	85	115	0	0		B

Sample ID: **08-5019-01EMS**	SampType: **MS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080724A**	Prep Date: **7/23/2008**	Units: **mg/L**
Client ID: **Inj 06 PT**	Batch ID: **16153**	TestNo: **E200.8**	FileID: **080724A.B\036SMPL.D**	Analysis Date: **7/24/2008**	SeqNo: **716915**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.0107	0.00200	0.01	0.0002737	107	70	130	0	0		
Arsenic	0.1076	0.00200	0.1	0.000802	108	70	130	0	0		
Barium	0.1372	0.0100	0.1	0.03885	98.4	70	130	0	0		
Beryllium	0.00999	0.00100	0.01	0	99.9	70	130	0	0		
Boron	1.056	0.200	1	0.03471	106	70	130	0	0		
Cadmium	0.01052	0.000500	0.01	0	105	70	130	0	0		
Calcium	4.296	0.400	1	3.352	94.4	70	130	0	0		
Chromium	0.1089	0.00220	0.1	0.004854	104	70	130	0	0		

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X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16153

Sample ID: **08-5019-01EMS**	SampType: **MS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080724A**	Prep Date: **7/23/2008**	Units: **mg/L**
Client ID: **Inj 06 PT**	Batch ID: **16153**	TestNo: **E200.8**	FileID: **080724A.B\036SMPL.D**	Analysis Date: **7/24/2008**	SeqNo: **716915**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Copper	0.1099	0.0100	0.1	0.00839	110	70	130	0	0		
Iron	4.042	0.200	1	3.181	86.1	70	130	0	0		
Lead	0.02247	0.00100	0.02	0.002096	102	70	130	0	0		
Magnesium	1.53	0.0500	1	0.5825	94.7	70	130	0	0		
Manganese	0.2677	0.00500	0.2	0.0585	105	70	130	0	0		
Molybdenum	0.1082	0.00500	0.1	0.004247	108	70	130	0	0		
Nickel	0.1052	0.0100	0.1	0.002928	105	70	130	0	0		
Potassium	1.682	0.125	1	0.726	95.6	70	130	0	0		
Selenium	0.0184	0.00200	0.02	0	92	70	130	0	0		
Silver	0.0103	0.000200	0.01	0.00004798	103	70	130	0	0		
Sodium	89.3	0.500	1	88.75	55	70	130	0	0		S
Strontium	0.1684	0.0980	0.1	0.0684	~~168~~ 100	70	130	0	0		~~S~~ CVR 8/15/08
Thallium	0.005135	0.00100	0.005	0	103	70	130	0	0		
Zinc	0.2439	0.00500	0.2	0.02811	108	70	130	0	0		B

Sample ID: **08-5019-01EMSD**	SampType: **MSD**	TestCode: **200.8_TR**	Run ID: **ICPMS_080724A**	Prep Date: **7/23/2008**	Units: **mg/L**
Client ID: **Inj 06 PT**	Batch ID: **16153**	TestNo: **E200.8**	FileID: **080724A.B\037SMPL.D**	Analysis Date: **7/24/2008**	SeqNo: **716916**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.01043	0.00200	0.01	0.0002737	104	70	130	0.0107	2.56	20	
Arsenic	0.1047	0.00200	0.1	0.000802	105	70	130	0.1076	2.69	20	
Barium	0.131	0.0100	0.1	0.03885	92.1	70	130	0.1372	4.66	20	
Beryllium	0.01013	0.00100	0.01	0	101	70	130	0.00999	1.34	20	
Boron	1.05	0.200	1	0.03471	105	70	130	1.056	0.522	20	
Cadmium	0.009785	0.000500	0.01	0	97.9	70	130	0.01052	7.19	20	
Calcium	4.276	0.400	1	3.352	92.4	70	130	4.296	0.467	20	
Chromium	0.1048	0.00220	0.1	0.004854	99.9	70	130	0.1089	3.84	20	
Copper	0.1058	0.0100	0.1	0.00839	106	70	130	0.1099	3.76	20	
Iron	3.996	0.200	1	3.181	81.5	70	130	4.042	1.14	20	
Lead	0.02158	0.00100	0.02	0.002096	97.4	70	130	0.02247	4.04	20	
Magnesium	1.538	0.0500	1	0.5825	95.5	70	130	1.53	0.522	20	

Qualifiers:

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H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16153

Sample ID: **08-5019-01EMSD**	SampType: **MSD**	TestCode: **200.8_TR**	Run ID: **ICPMS_080724A**	Prep Date: **7/23/2008**	Units: **mg/L**
Client ID: **Inj 06 PT**	Batch ID: **16153**	TestNo: **E200.8**	FileID: **080724A.B\037SMPL.D**	Analysis Date: **7/24/2008**	SeqNo: **716916**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.2554	0.00500	0.2	0.0585	98.4	70	130	0.2677	4.70	20	
Molybdenum	0.1036	0.00500	0.1	0.004247	104	70	130	0.1082	4.39	20	
Nickel	0.1002	0.0100	0.1	0.002928	100	70	130	0.1052	4.87	20	
Potassium	1.653	0.125	1	0.726	92.7	70	130	1.682	1.74	20	
Selenium	0.01893	0.00200	0.02	0	94.7	70	130	0.0184	2.84	20	
Silver	0.01007	0.000200	0.01	0.00004798	101	70	130	0.0103	2.31	20	
Sodium	88.75	0.500	1	88.75	0	70	130	89.3	0.618	20	S
Strontium	0.1641	0.0980	0.1	0.0684	~~164~~ 95.7	70	130	0.1684	2.59	20	~~S~~ cor 8/6/08
Thallium	0.004933	0.00100	0.005	0	98.7	70	130	0.005135	4.01	20	
Zinc	0.2404	0.00500	0.2	0.02811	106	70	130	0.2439	1.42	20	B

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *25-Jul-08*

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16078

Sample ID: **08-4647-01AMS**	SampType: **MS**	TestCode: **245.1_DKW**	Run ID: **HG ANALYZER_080717A**	Prep Date: **7/17/2008**	Units: **mg/L**
	Batch ID: **16078**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/17/2008**	SeqNo: **713080**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00317	0.00010	0.003	0	106	70	130	0	0		

Sample ID: **08-4647-01AMSD**	SampType: **MSD**	TestCode: **245.1_DKW**	Run ID: **HG ANALYZER_080717A**	Prep Date: **7/17/2008**	Units: **mg/L**
	Batch ID: **16078**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/17/2008**	SeqNo: **713081**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00321	0.00010	0.003	0	107	70	130	0.00317	1.25	20	

Sample ID: **MB-16078**	SampType: **MBLK**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080717A**	Prep Date: **7/17/2008**	Units: **mg/L**
	Batch ID: **16078**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/17/2008**	SeqNo: **713077**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0	0.000100									

Sample ID: **LCS-16078**	SampType: **LCS**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080717A**	Prep Date: **7/17/2008**	Units: **mg/L**
	Batch ID: **16078**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/17/2008**	SeqNo: **713078**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.000974	0.000100	0.001	0	97.4	85	115	0	0		

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *24-Jul-08*

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16140**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16140**	TestNo: **E504.1**	FileID: **012.D**	Analysis Date: **7/23/2008**	SeqNo: **716268**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16140**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16140**	TestNo: **E504.1**	FileID: **013.D**	Analysis Date: **7/23/2008**	SeqNo: **716269**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.274	0.020	0.25	0	110	70	130	0	0		
1,2-Dibromoethane	0.27	0.010	0.25	0	108	70	130	0	0		

Sample ID: **LCS-16140-2**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
	Batch ID: **16140**	TestNo: **E504.1**	FileID: **014.D**	Analysis Date: **7/23/2008**	SeqNo: **716270**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.273	0.020	0.25	0	109	70	130	0	0		
1,2-Dibromoethane	0.266	0.010	0.25	0	106	70	130	0	0		

Sample ID: **08-5019-01FMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080723A**	Prep Date: **7/23/2008**	Units: **µg/L**
Client ID: **Inj 06 PT**	Batch ID: **16140**	TestNo: **E504.1**	FileID: **016.D**	Analysis Date: **7/23/2008**	SeqNo: **716272**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.114	0.020	1	0	111	65	135	0	0		
1,2-Dibromoethane	1.043	0.010	1	0	104	65	135	0	0		

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *22-Jul-08*

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **GB072108**	SampType: **MBLK**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072104**	Analysis Date: **7/21/08**	SeqNo: **714853**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS072108**	SampType: **LCS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072105**	Analysis Date: **7/21/08**	SeqNo: **714854**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.122	0.016	0.9548	0	118	70	130	0	0		
Ethene	1.262	0.024	0.8913	0	142	70	140	0	0		S
Methane	0.5747	0.0080	0.5094	0	113	70	130	0	0		

Sample ID: **LCSD072108**	SampType: **LCSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072106**	Analysis Date: **7/21/08**	SeqNo: **714855**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.129	0.016	0.9548	0	118	70	130	1.122	0.659	30	
Ethene	1.27	0.024	0.8913	0	142	70	140	1.262	0.627	30	S
Methane	0.5794	0.0080	0.5094	0	114	70	130	0.5747	0.825	30	

Sample ID: **08-5116-01BMS**	SampType: **MS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072109**	Analysis Date: **7/21/08**	SeqNo: **714850**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.01	0.016	0.9548	0	106	70	130	0	0		
Ethene	1.128	0.024	0.8913	0	127	70	140	0	0		
Methane	0.5168	0.0080	0.5094	0	101	70	130	0	0		

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R - RPD outside acceptance limits
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X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **08-5116-01BMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072110**	Analysis Date: **7/21/08**	SeqNo: **714851**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	0.993	0.016	0.9548	0	104	70	130	1.01	1.68	30	
Ethene	1.107	0.024	0.8913	0	124	70	140	1.128	1.88	30	
Methane	0.5074	0.0080	0.5094	0	99.6	70	130	0.5168	1.84	30	

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *18-Jul-08*

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB4071608a**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-4_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **R40651**	TestNo: **E524.2**	FileID: **\VOA40716\1201012.D**	Analysis Date: **7/16/2008**	SeqNo: **713937**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: MB4071608a	SampType: MBLK	TestCode: 524	Run ID: VOA-4_080716A	Prep Date: 7/16/2008	Units: µg/L
	Batch ID: R40651	TestNo: E524.2	FileID: \VOA40716\1201012.D	Analysis Date: 7/16/2008	SeqNo: 713937

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

Qualifiers:

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B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB4071608a**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-4_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **R40651**	TestNo: **E524.2**	FileID: **\VOA40716\1201012.D**	Analysis Date: **7/16/2008**	SeqNo: **713937**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	4.83	0	5	0	96.6	70	130	0	0		
Surr: 4-Bromofluorobenzene	4.78	0	5	0	95.6	70	130	0	0		

Sample ID: **LCS4071608a**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-4_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **R40651**	TestNo: **E524.2**	FileID: **\VOA40716\1301013.D**	Analysis Date: **7/16/2008**	SeqNo: **713938**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.11	0.50	5	0	102	70	130	0	0		
Bromobenzene	5.11	0.50	5	0	102	70	130	0	0		
Bromochloromethane	5.19	0.50	5	0	104	70	130	0	0		
Bromodichloromethane	5.36	0.50	5	0	107	70	130	0	0		
Bromoform	4.72	0.50	5	0	94.4	70	130	0	0		
Bromomethane	5.18	0.50	5	0	104	70	130	0	0		
n-Butylbenzene	5.26	0.50	5	0	105	70	130	0	0		
sec-Butylbenzene	5.11	0.50	5	0	102	70	130	0	0		
t-Butylbenzene	5.06	0.50	5	0	101	70	130	0	0		
Carbon tetrachloride	5.12	0.50	5	0	102	70	130	0	0		
Chlorobenzene	4.97	0.50	5	0	99.4	70	130	0	0		
Chloroethane	4.85	0.50	5	0	97	70	130	0	0		
Chloroform	5.15	0.50	5	0	103	70	130	0	0		
Chloromethane	4.77	0.50	5	0	95.4	70	130	0	0		
2-Chlorotoluene	5.06	0.50	5	0	101	70	130	0	0		
4-Chlorotoluene	5	0.50	5	0	100	70	130	0	0		
Dibromochloromethane	4.95	0.50	5	0	99	70	130	0	0		
Dibromomethane	5.19	0.50	5	0	104	70	130	0	0		
1,2-Dichlorobenzene	4.9	0.50	5	0	98	70	130	0	0		
1,3-Dichlorobenzene	4.89	0.50	5	0	97.8	70	130	0	0		
1,4-Dichlorobenzene	4.93	0.50	5	0	98.6	70	130	0	0		
Dichlorodifluoromethane	6	0.50	5	0	120	70	130	0	0		
1,1-Dichloroethane	5.06	0.50	5	0	101	70	130	0	0		
1,2-Dichloroethane	4.93	0.50	5	0	98.6	70	130	0	0		

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS4071608a**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-4_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **R40651**	TestNo: **E524.2**	FileID: **\VOA40716\1301013.D**	Analysis Date: **7/16/2008**	SeqNo: **713938**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	5.33	0.50	5	0	107	70	130	0	0		
cis-1,2-Dichloroethene	5.3	0.50	5	0	106	70	130	0	0		
trans-1,2-Dichloroethene	5.35	0.50	5	0	107	70	130	0	0		
1,2-Dichloropropane	5.18	0.50	5	0	104	70	130	0	0		
1,3-Dichloropropane	5.05	0.50	5	0	101	70	130	0	0		
2,2-Dichloropropane	4.89	0.50	5	0	97.8	70	130	0	0		
1,1-Dichloropropene	5.01	0.50	5	0	100	70	130	0	0		
cis-1,3-Dichloropropene	5.04	0.50	5	0	101	70	130	0	0		
trans-1,3-Dichloropropene	4.45	0.50	5	0	89	70	130	0	0		
Ethylbenzene	5.16	0.50	5	0	103	70	130	0	0		
Hexachlorobutadiene	5.01	0.50	5	0	100	70	130	0	0		
Isopropylbenzene	4.48	0.50	5	0	89.6	70	130	0	0		
p-Isopropyltoluene	5.04	0.50	5	0	101	70	130	0	0		
Methylene chloride	5.69	0.50	5	0	114	70	130	0	0		
Naphthalene	4.87	0.50	5	0	97.4	70	130	0	0		
n-Propylbenzene	5.05	0.50	5	0	101	70	130	0	0		
Styrene	5.3	0.50	5	0	106	70	130	0	0		
1,1,1,2-Tetrachloroethane	4.97	0.50	5	0	99.4	70	130	0	0		
1,1,2,2-Tetrachloroethane	4.88	0.50	5	0	97.6	70	130	0	0		
Tetrachloroethene	5.19	0.50	5	0	104	70	130	0	0		
Toluene	4.96	0.50	5	0	99.2	70	130	0	0		
1,2,3-Trichlorobenzene	5.04	0.50	5	0	101	70	130	0	0		
1,2,4-Trichlorobenzene	5	0.50	5	0	100	70	130	0	0		
1,1,1-Trichloroethane	5.03	0.50	5	0	101	70	130	0	0		
1,1,2-Trichloroethane	5.18	0.50	5	0	104	70	130	0	0		
Trichloroethene	5.08	0.50	5	0	102	70	130	0	0		
Trichlorofluoromethane	4.93	0.50	5	0	98.6	70	130	0	0		
1,2,3-Trichloropropane	4.97	0.50	5	0	99.4	70	130	0	0		
1,2,4-Trimethylbenzene	5.24	0.50	5	0	105	70	130	0	0		
1,3,5-Trimethylbenzene	5.16	0.50	5	0	103	70	130	0	0		
Vinyl chloride	5.75	0.50	5	0	115	70	130	0	0		

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS4071608a**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-4_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **R40651**	TestNo: **E524.2**	FileID: **\VOA40716\1301013.D**	Analysis Date: **7/16/2008**	SeqNo: **713938**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	9.97	0.50	10	0	99.7	70	130	0	0		
o-Xylene	4.79	0.50	5	0	95.8	70	130	0	0		
1,3-Dichloropropene	9.49	0.50	10	0	94.9	70	130	0	0		
Xylenes, Total	14.76	0.50	15	0	98.4	70	130	0	0		
Total THM (Summation of above)	20.18	0.50	20	0	101	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	5.06	0	5	0	101	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.13	0	5	0	103	70	130	0	0		

Sample ID: **LCSD4071608a**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-4_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **R40651**	TestNo: **E524.2**	FileID: **\VOA40716\2101021.D**	Analysis Date: **7/17/2008**	SeqNo: **713946**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.83	0.50	5	0	96.6	70	130	5.11	5.63	30	
Bromobenzene	4.8	0.50	5	0	96	70	130	5.11	6.26	30	
Bromochloromethane	4.77	0.50	5	0	95.4	70	130	5.19	8.43	30	
Bromodichloromethane	5.02	0.50	5	0	100	70	130	5.36	6.55	30	
Bromoform	4.32	0.50	5	0	86.4	70	130	4.72	8.85	30	
Bromomethane	4.62	0.50	5	0	92.4	70	130	5.18	11.4	30	
n-Butylbenzene	4.96	0.50	5	0	99.2	70	130	5.26	5.87	30	
sec-Butylbenzene	4.93	0.50	5	0	98.6	70	130	5.11	3.59	30	
t-Butylbenzene	4.87	0.50	5	0	97.4	70	130	5.06	3.83	30	
Carbon tetrachloride	4.86	0.50	5	0	97.2	70	130	5.12	5.21	30	
Chlorobenzene	4.71	0.50	5	0	94.2	70	130	4.97	5.37	30	
Chloroethane	4.71	0.50	5	0	94.2	70	130	4.85	2.93	30	
Chloroform	4.78	0.50	5	0	95.6	70	130	5.15	7.45	30	
Chloromethane	4.71	0.50	5	0	94.2	70	130	4.77	1.27	30	
2-Chlorotoluene	4.93	0.50	5	0	98.6	70	130	5.06	2.60	30	
4-Chlorotoluene	4.81	0.50	5	0	96.2	70	130	5	3.87	30	
Dibromochloromethane	4.58	0.50	5	0	91.6	70	130	4.95	7.76	30	
Dibromomethane	4.72	0.50	5	0	94.4	70	130	5.19	9.49	30	
1,2-Dichlorobenzene	4.63	0.50	5	0	92.6	70	130	4.9	5.67	30	

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCSD4071608a	SampType: LCSD	TestCode: 524	Run ID: VOA-4_080716A	Prep Date: 7/16/2008	Units: µg/L
	Batch ID: R40651	TestNo: E524.2	FileID: \VOA40716\2101021.D	Analysis Date: 7/17/2008	SeqNo: 713946

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	4.69	0.50	5	0	93.8	70	130	4.89	4.18	30	
1,4-Dichlorobenzene	4.64	0.50	5	0	92.8	70	130	4.93	6.06	30	
Dichlorodifluoromethane	5.86	0.50	5	0	117	70	130	6	2.36	30	
1,1-Dichloroethane	4.82	0.50	5	0	96.4	70	130	5.06	4.86	30	
1,2-Dichloroethane	4.63	0.50	5	0	92.6	70	130	4.93	6.28	30	
1,1-Dichloroethene	5.07	0.50	5	0	101	70	130	5.33	5.00	30	
cis-1,2-Dichloroethene	4.88	0.50	5	0	97.6	70	130	5.3	8.25	30	
trans-1,2-Dichloroethene	5.07	0.50	5	0	101	70	130	5.35	5.37	30	
1,2-Dichloropropane	4.84	0.50	5	0	96.8	70	130	5.18	6.79	30	
1,3-Dichloropropane	4.75	0.50	5	0	95	70	130	5.05	6.12	30	
2,2-Dichloropropane	4.32	0.50	5	0	86.4	70	130	4.89	12.4	30	
1,1-Dichloropropene	4.8	0.50	5	0	96	70	130	5.01	4.28	30	
cis-1,3-Dichloropropene	4.57	0.50	5	0	91.4	70	130	5.04	9.78	30	
trans-1,3-Dichloropropene	4.07	0.50	5	0	81.4	70	130	4.45	8.92	30	
Ethylbenzene	4.96	0.50	5	0	99.2	70	130	5.16	3.95	30	
Hexachlorobutadiene	4.66	0.50	5	0	93.2	70	130	5.01	7.24	30	
Isopropylbenzene	4.32	0.50	5	0	86.4	70	130	4.48	3.64	30	
p-Isopropyltoluene	4.78	0.50	5	0	95.6	70	130	5.04	5.30	30	
Methylene chloride	5.6	0.50	5	0	112	70	130	5.69	1.59	30	
Naphthalene	4.55	0.50	5	0	91	70	130	4.87	6.79	30	
n-Propylbenzene	4.88	0.50	5	0	97.6	70	130	5.05	3.42	30	
Styrene	5.1	0.50	5	0	102	70	130	5.3	3.85	30	
1,1,1,2-Tetrachloroethane	4.74	0.50	5	0	94.8	70	130	4.97	4.74	30	
1,1,2,2-Tetrachloroethane	4.72	0.50	5	0	94.4	70	130	4.88	3.33	30	
Tetrachloroethene	5.01	0.50	5	0	100	70	130	5.19	3.53	30	
Toluene	4.72	0.50	5	0	94.4	70	130	4.96	4.96	30	
1,2,3-Trichlorobenzene	4.65	0.50	5	0	93	70	130	5.04	8.05	30	
1,2,4-Trichlorobenzene	4.68	0.50	5	0	93.6	70	130	5	6.61	30	
1,1,1-Trichlorcethane	4.76	0.50	5	0	95.2	70	130	5.03	5.52	30	
1,1,2-Trichloroethane	4.83	0.50	5	0	96.6	70	130	5.18	6.99	30	
Trichloroethene	4.83	0.50	5	0	96.6	70	130	5.08	5.05	30	

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5019
Client Project ID: Petroglyph wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCSD4071608a**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-4_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **R40651**	TestNo: **E524.2**	FileID: **\VOA40716\2101021.D**	Analysis Date: **7/17/2008**	SeqNo: **713946**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	4.71	0.50	5	0	94.2	70	130	4.93	4.56	30	
1,2,3-Trichloropropane	4.7	0.50	5	0	94	70	130	4.97	5.58	30	
1,2,4-Trimethylbenzene	5.08	0.50	5	0	102	70	130	5.24	3.10	30	
1,3,5-Trimethylbenzene	4.91	0.50	5	0	98.2	70	130	5.16	4.97	30	
Vinyl chloride	5.62	0.50	5	0	112	70	130	5.75	2.29	30	
m,p-Xylene	9.6	0.50	10	0	96	70	130	9.97	3.78	30	
o-Xylene	4.66	0.50	5	0	93.2	70	130	4.79	2.75	30	
1,3-Dichloropropene	8.64	0.50	10	0	86.4	70	130	9.49	9.38	30	
Xylenes, Total	14.26	0.50	15	0	95.1	70	130	14.76	3.45	30	
Total THM (Summation of above)	18.7	0.50	20	0	93.5	70	130	20.18	7.61	30	
Surr: 1,2-Dichlorobenzene-d4	5.04	0	5	0	101	70	130	0	0	0	
Surr: 4-Bromofluorobenzene	5.1	0	5	0	102	70	130	0	0	0	

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical Laboratory

August 14, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-5019
Client Project ID: Petroglyph wells

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

WORK ORDER Summary Evergreen Analytical, Inc. 08-5433

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: Tmelland@petroglyphenergy.com

7/30/2008 5:28:46 PM

Client Project ID: Petroglyph CBM Wells

QC Level: LEVEL I+

Comments PDF + EDD in Pinery

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-5433-01A	Inj 07 PT	Water	7/29/08 1350	7/30/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	8/13/08	7/31/08
08-5433-01B	Inj 07 PT	Water	7/29/08 1350	7/30/08	F_W	Fluoride	☐	☐	8/13/08	8/26/08
08-5433-01C	Inj 07 PT	Water	7/29/08 1350	7/30/08	200.8_TR *	200.8: Total Metals	☐	☐	8/13/08	1/25/09
08-5433-01C	Inj 07 PT	Water	7/29/08 1350	7/30/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	8/13/08	8/26/08
08-5433-01D	Inj 07 PT	Water	7/29/08 1350	7/30/08	ALK_WGRP *	Alkalinity	☐	☐	8/13/08	8/12/08
08-5433-01D	Inj 07 PT	Water	7/29/08 1350	7/30/08	PH_W	Discharge Water pH	☐	☐	8/13/08	7/29/08
08-5433-01D	Inj 07 PT	Water	7/29/08 1350	7/30/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	8/13/08	8/05/08
08-5433-01D	Inj 07 PT	Water	7/29/08 1350	7/30/08	TSS	Total Suspended Solids (TSS)	☐	☐	8/13/08	8/05/08
08-5433-01E	Inj 07 PT	Water	7/29/08 1350	7/30/08	ALBETA	Gross Alpha-Beta	☐	☐	8/13/08	1/25/09
08-5433-01E	Inj 07 PT	Water	7/29/08 1350	7/30/08	TS_SUB	Total Solids for Gross A B	☐	☐	8/13/08	8/05/08
08-5433-01F	Inj 07 PT	Water	7/29/08 1350	7/30/08	504 *	504: Standard List	☐	☐	8/13/08	8/12/08
08-5433-01G	Inj 07 PT	Water	7/29/08 1350	7/30/08	524 *	524.2: Standard List	☐	☐	8/13/08	8/12/08
08-5433-01G	Inj 07 PT	Water	7/29/08 1350	7/30/08	VOATICS	VOA TICS (Largest 10)	☐	☐	8/13/08	8/12/08
08-5433-01H	Inj 07 PT	Water	7/29/08 1350	7/30/08	MEEP_W *	RSK175M: MEE	☐	☐	8/13/08	8/12/08
08-5433-01I	Inj 07 PT	Water	7/29/08 1350	7/30/08	SULF_W	Total Sulfide	☐	☐	8/13/08	8/05/08
08-5433-01J	Inj 07 PT	Water	7/29/08 1350	7/30/08	CN_TW	Total Cyanide	☐	☐	8/13/08	8/12/08
08-5433-01K	Inj 07 PT	Water	7/29/08 1350	7/30/08	RAD226/228	Radium 226/228	☐	☐	8/13/08	1/25/09

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Page 1 of 1

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

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719 742 5570 Fax # 719 742 5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ❑ FAX ☑ PDF ☑ EDD
REPORT CHROMATOGRAMS ❑ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719 742 5570 Fax # 719 742 5571
Project ID# Petroglyph CBM Wells
P.O. _____ Quote 10165
Sampler M. Barrett

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	300.0 Anions by IC	Fluoride	200.8 11 regulated	Alkalinity	Total Solids	Gross Alpha	504.1 EDB/DBCP	524.2 VOATICS	RSKSOP-175M	Total Sulfide	TSS, TDS, pH	Total Cyanide	Radium 226/228	Gross Alpha-Beta	ANALYSES (check anaylsis)	For Laboratory Use Only
																					← # of bottles	
Inj 07 PT	7/29/08	13:50	1 cooler, 20 bottles	2			1	1	1	1		2	3	3	1	1	1	4	1			01
																						CN pd 7/12
																						metals pd 2
Does this analysis involve property transfer? ❑Yes or ❑No							A	B	C	D E	F	G	H	I	D	J	K	E				Sample Fraction

Instructions:

** **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
Michael J. Barrett	7/29/08 16:00						7/30/8 1030A

Evergreen Analytical, Inc. **Date:** *02-Sep-08*

Lab Order: 08-5433
Client Project ID Petroglyph CBM Wells

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 0.8 °C.
Sample(s) were received in good condition, in the proper container.
The pH sample was received out of the discharge water holding time.
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 (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of RCRA samples meet the requirements of NELAC and Utah Rule R444-14 unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained.
The QA pages (method blanks and spike reports) were retained in the project file and are available upon request. CMS

CLIENT SERVICES

The metal, alkalinity, and anion analytes were selected per the quotation. EKH

GENERAL CHEMISTRY

The pH was analyzed past the discharge water holding time (H) but was within the drinking water holding time. The flagged Fluoride result only applies to drinking waters that exceed the MCL.
There are no other anomalies to report. MM/CMS

METALS ANALYSIS

Sample(s) were preserved by the metals group prior to analysis.
The sample was turbid and required 200.8 total digestion prior to analysis. Lead was detected in the method blank (MB) at 0.001 mg/L. This amount was not subtracted from the sample result. There are no other anomalies to report. MB

GAS CHROMATOGRAPHY

Method 504.1: There are no anomalies to report. AE

Evergreen Analytical, Inc. **Date:** *02-Sep-08*

Lab Order: 08-5433
Client Project ID Petroglyph CBM Wells

CASE NARRATIVE

Method RSK175M: Laboratory control spikes (LCS/LCSD) and matrix spike duplicate (MSD) recoveries for Ethene are above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS/CMS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: There are no anomalies to report. DC

005

AUG 30 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 7983

WorkOrder: 08-5433

Outside Laboratory:
Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

30-Jul-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests						
				ALPHABETA	RAD226/228	TS				
					(4)					
08-5433-01E	Water	7/29/2008 1:50:00 PM	1LPHNO3	1		1				
08-5433-01K	Water	7/29/2008 1:50:00 PM	1LPHNO3		1					

Comments:

2:40PM

	Date/Time		Date/Time
Relinquished by:	7/31-04	**Received by:** Diane Tipton	7-31-08 1440
Relinquished by:		**Received by:**	

AUG 3 0 2008

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 29, 2008
HRI PROJECT	009-93
HRI SERIES NO	G511/08
DATE REC'D.	7/31/2008
CUST. P.O.#	7983

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G511/08-1

SAMPLE IDENTIFICATION: 08-5433-01E, K - sampled on 07/29/2008 @ 1350

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	41(+-4)	1.7	SM 7110 B	8/25/2008 @ 0831	AN
Gross Beta (+-Precision*), pCi/l (T)	23(+-3)	2.2	SM 7110 B	8/25/2008 @ 0831	AN
Radium-226 (+-Precision*), pCi/l (T)	2.3(+-0.9)	0.3	SM 7500-Ra B	8/14/2008 @ 1010	EDF
Radium-228 (+-Precision*), pCi/l (T)	3.1(+-0.9)	0.6	EPA Ra-05	8/14/2008 @ 1415	AN
Total Solids, mg/l	1280	10	EPA 160.3	8/11/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808;
NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 07 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/29/08 1350
Date Received: 7/30/08

Lab Work Order: 08-5433
Lab Sample ID: 08-5433-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 7/30/08 **Lab File ID:** 29 **Dilution Factor:** 1
Date Analyzed: 7/30/08 1546 **Method Blank:** MB 073008 **Lab Fraction ID:** 08-5433-01A

Analytes	CAS Number	Result	LQL	Units
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	0.49	0.20	mg/L
Nitrate-N		U	0.045	mg/L
Sulfate	7778-80-2	0.87	0.50	mg/L

Date Prepared: 7/31/08 **Lab File ID:** 11 **Dilution Factor:** 2
Date Analyzed: 7/31/08 1205 **Method Blank:** MB 073108 **Lab Fraction ID:** 08-5433-01A

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	57.7	1.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/4/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 07 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/29/08 1350
Date Received: 7/30/08

Lab Work Order: 08-5433
Lab Sample ID: 08-5433-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 7/30/08
Date Analyzed: 7/30/08
Lab File ID: 101
Method Blank: MBLK 073008
Dilution Factor: 1
Lab Fraction ID: 08-5433-01D

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		121	5.0	mg/L CaCO3
Bicarbonate		102	5.0	mg/L CaCO3
Carbonate		19.5	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 8/6/08
Date Analyzed: 8/6/08
Lab File ID: 55
Method Blank: MBLK 08/06/08
Dilution Factor: 1
Lab Fraction ID: 08-5433-01J

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 8/5/08
Date Analyzed: 8/5/08
Lab File ID: 9
Method Blank: MBLK 080508
Dilution Factor: 1
Lab Fraction ID: 08-5433-01B

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	15.5 *	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 7/30/08
Date Analyzed: 7/30/08 1320
Dilution Factor: 1
Lab Fraction ID: 08-5433-01D

Analytes	CAS Number	Result	LQL	Units
pH		9.26 H	1.00	pH Units

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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/7/08

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 07 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/29/08 1350
Date Received: 7/30/08

Lab Work Order 08-5433
Lab Sample ID: 08-5433-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 8/1/08
Date Analyzed: 8/1/08
Lab File ID: 63
Method Blank: MBLK 080108
Dilution Factor: 1
Lab Fraction ID: 08-5433-01I

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 7/31/08
Date Analyzed: 7/31/08
Lab File ID: 24
Method Blank: MBLK 073108
Dilution Factor: 1
Lab Fraction ID: 08-5433-01D

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		690	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 8/4/08
Date Analyzed: 8/4/08
Lab File ID: 4
Method Blank: MBLK 080408
Dilution Factor: 1
Lab Fraction ID: 08-5433-01D

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		827	5.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/7/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Inj 07 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/29/08
Date Received: 7/30/08

Lab Work Order 08-5433
Lab Sample ID: 08-5433-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 7/31/08
Date Analyzed: 8/2/08
Lab File ID: 080802A.B\068SMPL.D
Method Blank: MB-16229
Dilution Factor: 1
Lab Fraction ID: 08-5433-01C

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	0.00253	0.00200	mg/L
Barium	7440-39-3	0.474	0.0100	mg/L
Beryllium	7440-41-7	0.00204	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	14.5	0.400	mg/L
Chromium	7440-47-3	0.0361	0.00220	mg/L
Copper	7440-50-8	0.0468	0.0100	mg/L
Iron	7439-89-6	41.2	0.200	mg/L
Lead	7439-92-1	0.0240 B	0.00100	mg/L
Magnesium	7439-95-4	5.47	0.0500	mg/L
Manganese	7439-96-5	0.814	0.00500	mg/L
Molybdenum	7439-98-7	0.00919	0.00500	mg/L
Nickel	7440-02-0	0.0284	0.0100	mg/L
Potassium	7440-09-7	3.25	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	91.1	0.500	mg/L
Strontium	7440-24-6	0.339	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.113	0.00500	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/7/08

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862

(303) 425-6021

Client Sample ID: Inj 07 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/29/08
Date Received: 7/30/08

Lab Work Order 08-5433
Lab Sample ID: 08-5433-01
Sample Matrix: Water

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 8/4/08
Date Analyzed: 8/4/08
Lab File ID: 80408
Method Blank: MB-16247
Dilution Factor: 1
Lab Fraction ID: 08-5433-01C

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	mg/L

MMB
Analyst

JS
Approved

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Sample analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/7/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 07 PT	**Lab Work Order:**	08-5433
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5433-01F
Date Collected:	7/29/2008	**Sample Matrix:**	Water
Date Received:	7/30/2008	**Lab File ID:**	024.D
Date Prepared:	7/31/2008	**Method Blank:**	MB-16222
Date Analyzed:	7/31/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/1/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 07 PT	**Lab Work Order:**	08-5433
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5433-01G
Date Collected:	7/29/2008	**Sample Matrix:**	Water
Date Received:	7/30/2008	**Lab File ID:**	1901019.D
Date Prepared:	7/30/2008	**Method Blank:**	MB6073008
Date Analyzed:	7/30/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**

B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/31/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Inj 07 PT	**Lab Work Order:**	08-5433
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5433-01G
Date Collected:	7/29/2008	**Sample Matrix:**	Water
Date Received:	7/30/2008	**Lab File ID:**	1901019.D
Date Prepared:	7/30/2008	**Method Blank:**	MB6073008
Date Analyzed:	7/30/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	0.750		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	101	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	98	**QC Limits:**	70-130 %REC

Analyst | **Approved**

Qualifiers: **See case narrative for a discussion**

B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/31/2008

Tentatively Identified Compound (LSC) summary

Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1901019.D
Acq On : 30 Jul 2008 8:50 pm
Operator : Don Chamot
Sample : 08-5433-01G
Misc : SAMP 524
ALS Vial : 19 Sample Multiplier: 1

LIBRARY SEARCH

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

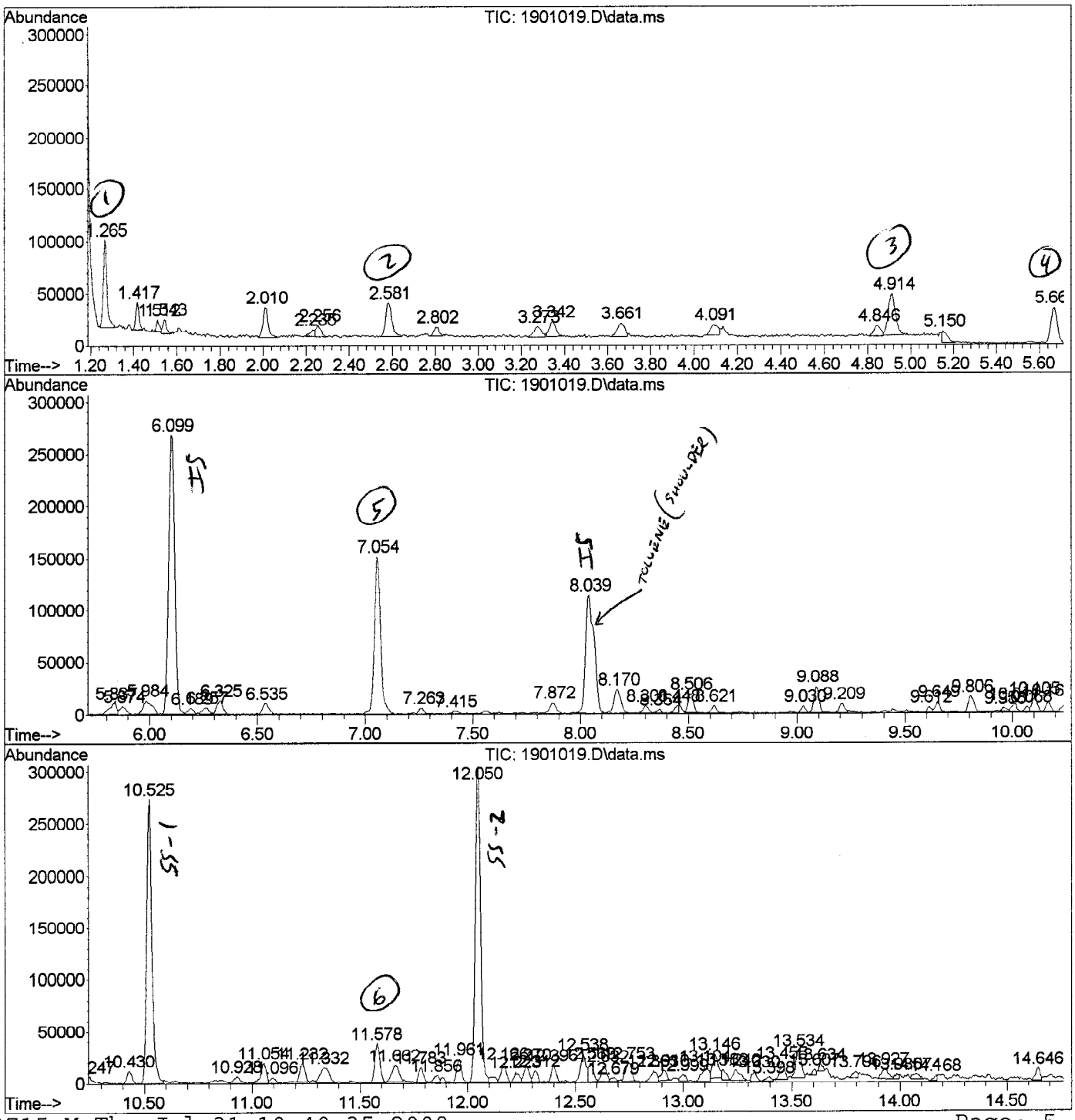
TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
cetoacetic aci...	1.265	0.9	ug/l	97857	1	6.105	524909	5.0
-Propanol, 2-m...	2.581	0.6	ug/l	65841	1	6.105	524909	5.0
uran, tetrahydro-	4.914	0.9	ug/l	92203	1	6.105	524909	5.0
yclohexane	5.669	0.7	ug/l	72547	1	6.105	524909	5.0
yclohexane, me...	7.054	2.9	ug/l	300650	1	6.105	524909	5.0
enzene, 1,2,3-...	11.578	0.6	ug/l	60836	1	6.105	524909	5.0

LSC Report - Integrated Chromatogram

Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1901019.D
Acq On : 30 Jul 2008 8:50 pm
Operator : Don Chamot
Sample : 08-5433-01G
Misc : SAMP 524
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1901019.D
Acq On : 30 Jul 2008 8:50 pm
Operator : Don Chamot
Sample : 08-5433-01G
Misc : SAMP 524
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

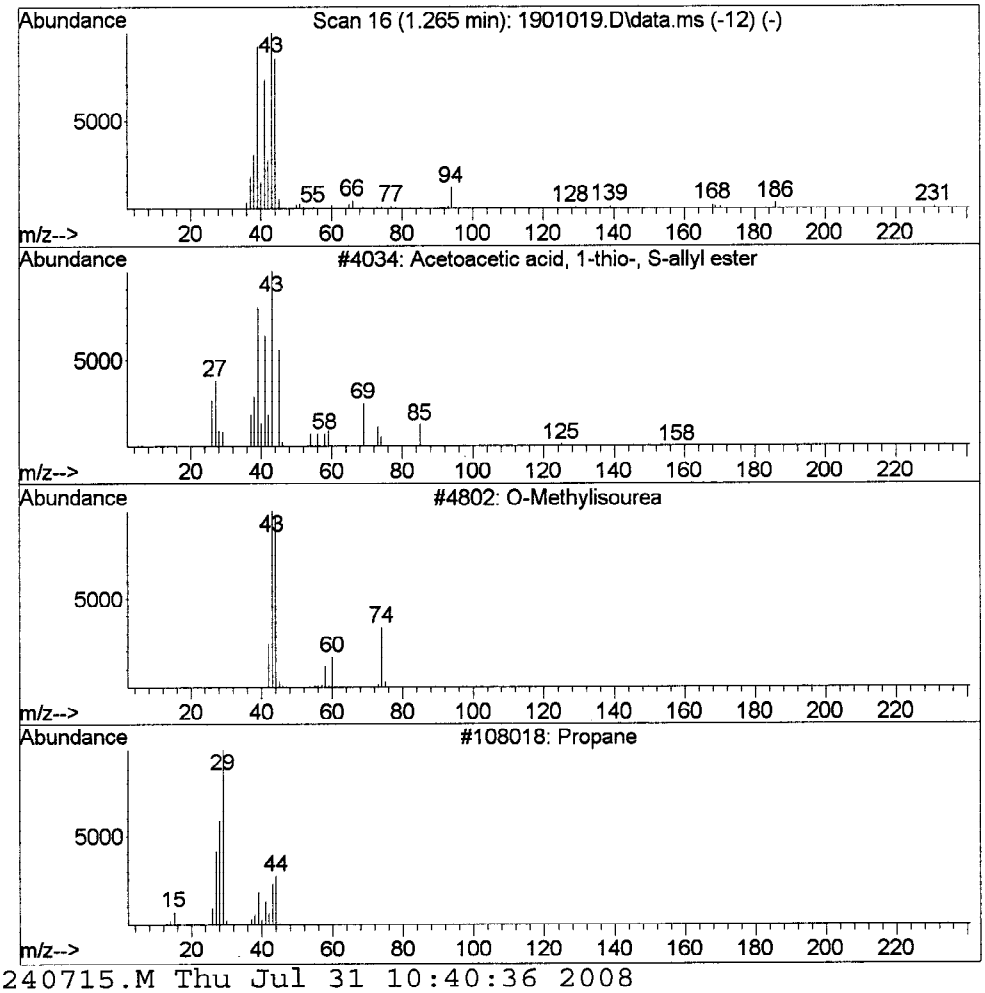
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TIC Integration Parameters: LSCINT.P

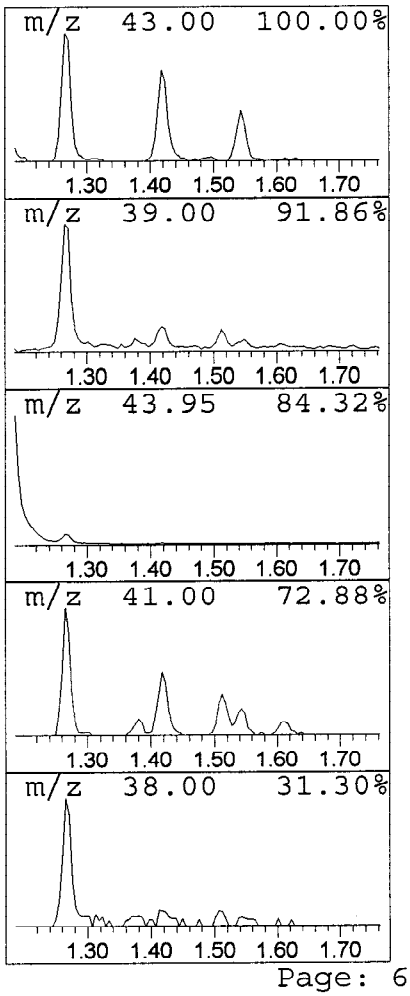
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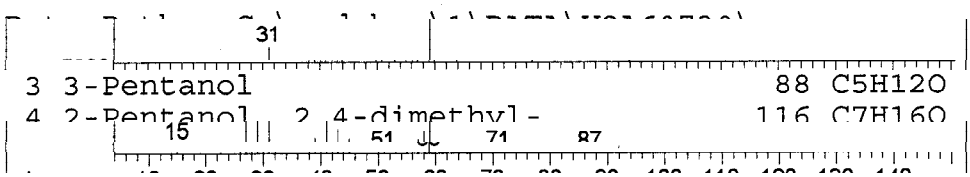
Peak Number 1 Acetoacetic acid, 1-thio-, ... Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.265	0.93 ug/l	97857	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Acetoacetic acid, 1-thio-, S-all...	158	C7H10O2S	015780-65-1	64
2	O-Methylisourea	74	C2H6N2O	1000130-40-4	40
3	Propane	44	C3H8	000074-98-6	39
4	1-Methoxy-1-buten-3-yne	82	C5H6O	002798-73-4	38
5	1-Propyne, 3-bromo-	118	C3H3Br	000106-96-7	38

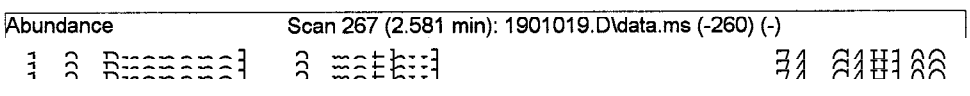




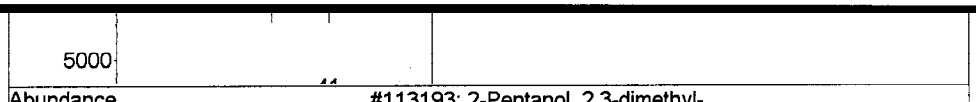


3 3-Pentanol 88 C5H12O 000584-02-1 56

4 2-Pentanol, 2,4-dimethyl- 116 C7H16O 000625-06-9 56



m/z 59.00 100.00%



TIC Integration Parameters: LSCINT.P

****

Peak Number 2 2-Propanol, 2-methyl- Concentration Rank 5

R.T.	Estconc	Area	Relative to ISTD	R.T.
2.581	0.63 ug/l	65841	Fluorobenzene (IS-1)	6.105

Hit# of 5 Tentative ID MW MolForm CAS# Qual

Library Search Compound Report

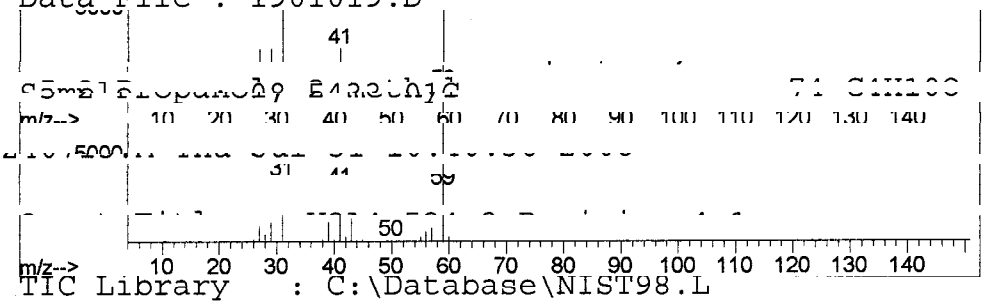
Acq On : 30 Jul 2008 8:50 pm

Misc : SAMP 524

ALS Vial : 19 Sample Multiplier: 1

Quant Title : VOA4 524.2 Revision 4.1

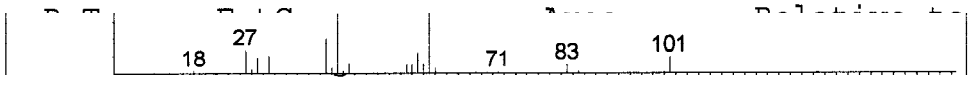
2 2-Pentanol, 2,3-dimethyl- 116 C7H16O 004911-70-0 56



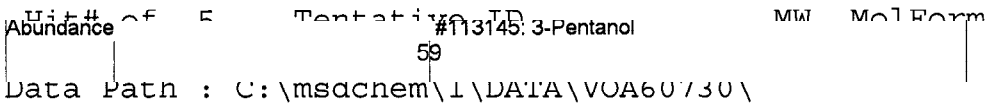
TIC Library : C:\Database\NIST98.L

TIC Integration Parameters: LSCINT.P

Peak Number 2 2-Propanol, 2-methyl- Concentration Rank 5



Hit# of 5 Tentative ID MW MolForm CAS# Qual

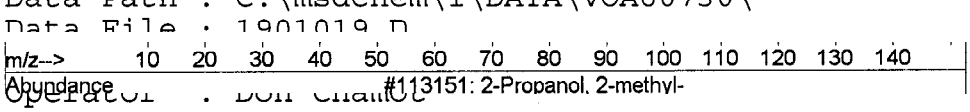


Data Path : C:\msdchem\1\DATA\VOA60730\

Data File : 1901019.D

Operator : Don Chandler

Sample : 08-5433-01G



Library Search Compound Report

Quant Method : C:\msdchem\1\METHODS\5240715.M

Acq On : 30 Jul 2008 8:50 pm

Operator : Don Chamot

Quant Method : C:\msdchem\1\METHODS\5240715.M

Quant Title : VOA4 524.2 Revision 4.1

Abundance

#3255: Oxirane, ethyl-

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
2	Oxirane, ethyl-	72	C4H8O	000106-88-7	78
3	Furan, tetrahydro-	72	C4H8O	000109-99-9	78
4	1-Propene, 2-methoxy-	72	C4H8O	000116-11-0	50

Misc : SAMP 524

Data Path : C:\msdchem\1\DATA\VOA60730\

Data File : 1901019.D

TIC Integration Parameters: LSCINT.P

Abundance

#109006: Furan, tetrahydro-

R.T.	EstConc	Area	Relative to ISTD	R.T.

TIC Library : C:\Database\NIST98.L

Peak Number 3 Furan, tetrahydro- Concentration Rank 3

1 Furan, tetrahydro- 72 C4H8O 000109-99-9 87

Operator : Don Chamot

Sample : 08-5433-01G

TIC Library : C:\Database\NIST98.L

Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1901019.D
Acq On : 30 Jul 2008 8:50 pm
Operator : Don Chamot
Sample : 08-5433-01G
Misc : SAMP 524
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

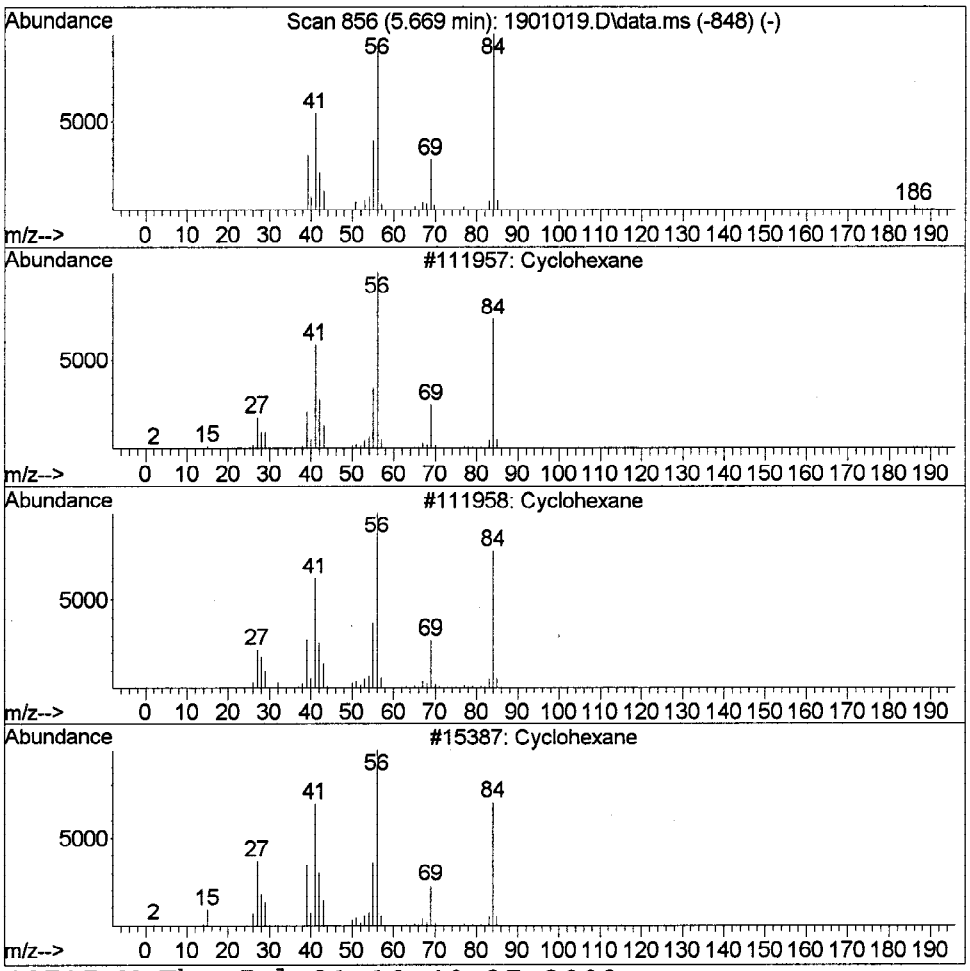
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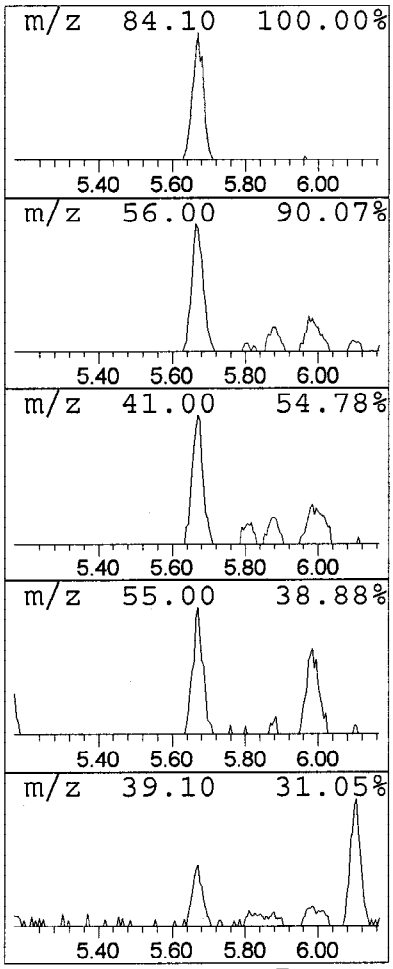
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Peak Number 4 Cyclohexane Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
5.669	0.69 ug/l	72547	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexane	84	C6H12	000110-82-7	91
2	Cyclohexane	84	C6H12	000110-82-7	91
3	Cyclohexane	84	C6H12	000110-82-7	91
4	Cyclohexane	84	C6H12	000110-82-7	91
5	Cyclopentane, methyl-	84	C6H12	000096-37-7	72





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1901019.D
Acq On : 30 Jul 2008 8:50 pm
Operator : Don Chamot
Sample : 08-5433-01G
Misc : SAMP 524
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

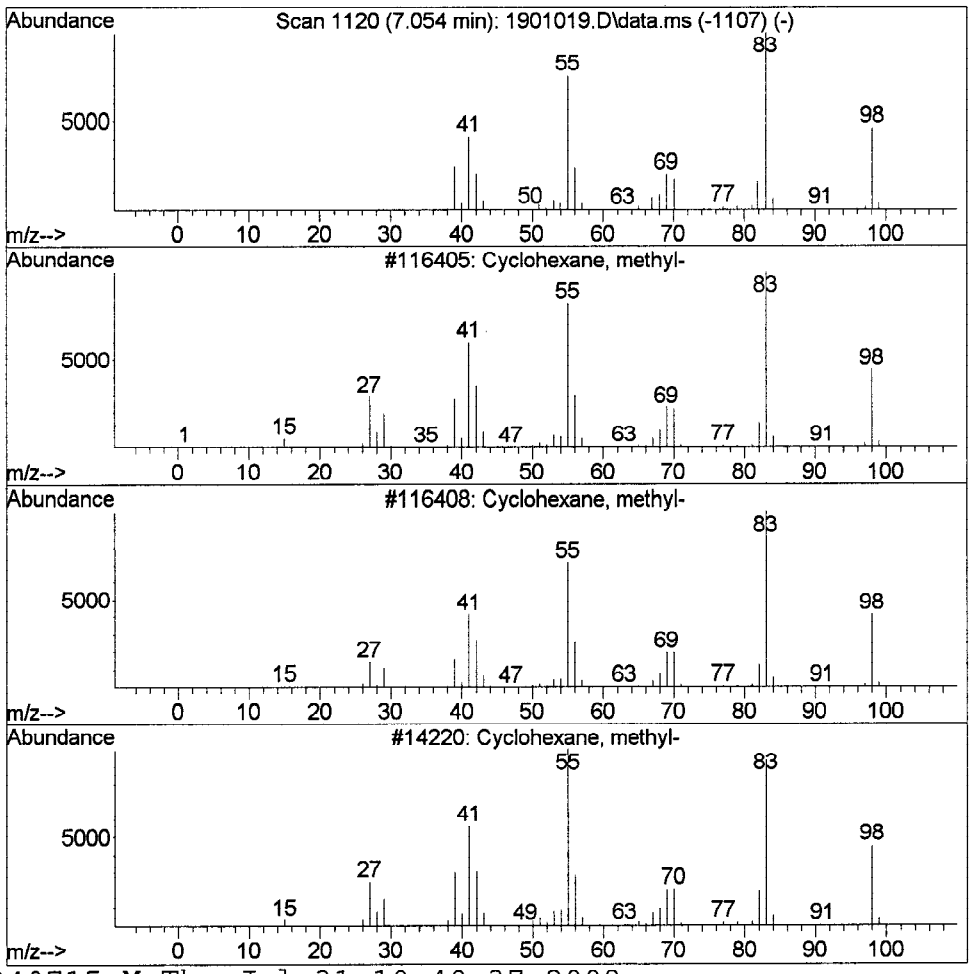
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TIC Integration Parameters: LSCINT.P

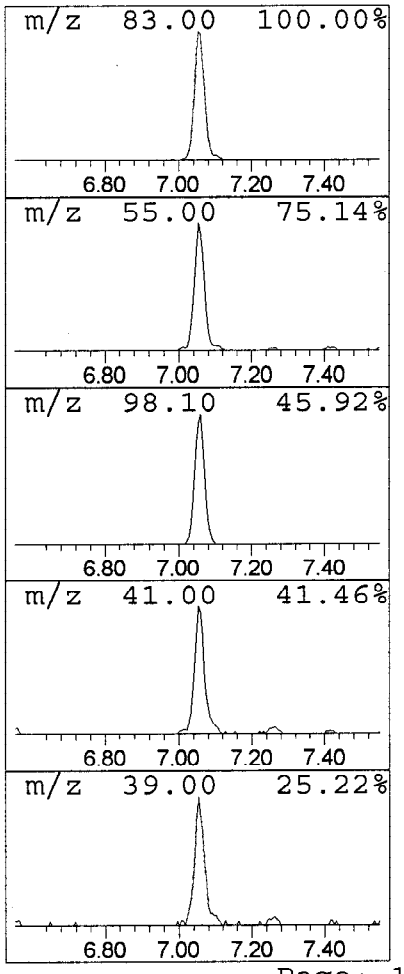
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Peak Number 5 Cyclohexane, methyl- Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
7.054	2.86 ug/l	300650	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexane, methyl-	98	C7H14	000108-87-2	96
2	Cyclohexane, methyl-	98	C7H14	000108-87-2	94
3	Cyclohexane, methyl-	98	C7H14	000108-87-2	94
4	Cyclohexane, methyl-	98	C7H14	000108-87-2	94
5	Cyclohexane, methyl-	98	C7H14	000108-87-2	91





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60730\
Data File : 1901019.D
Acq On : 30 Jul 2008 8:50 pm
Operator : Don Chamot
Sample : 08-5433-01G
Misc : SAMP 524
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240715.M
Quant Title : VOA4 524.2 Revision 4.1

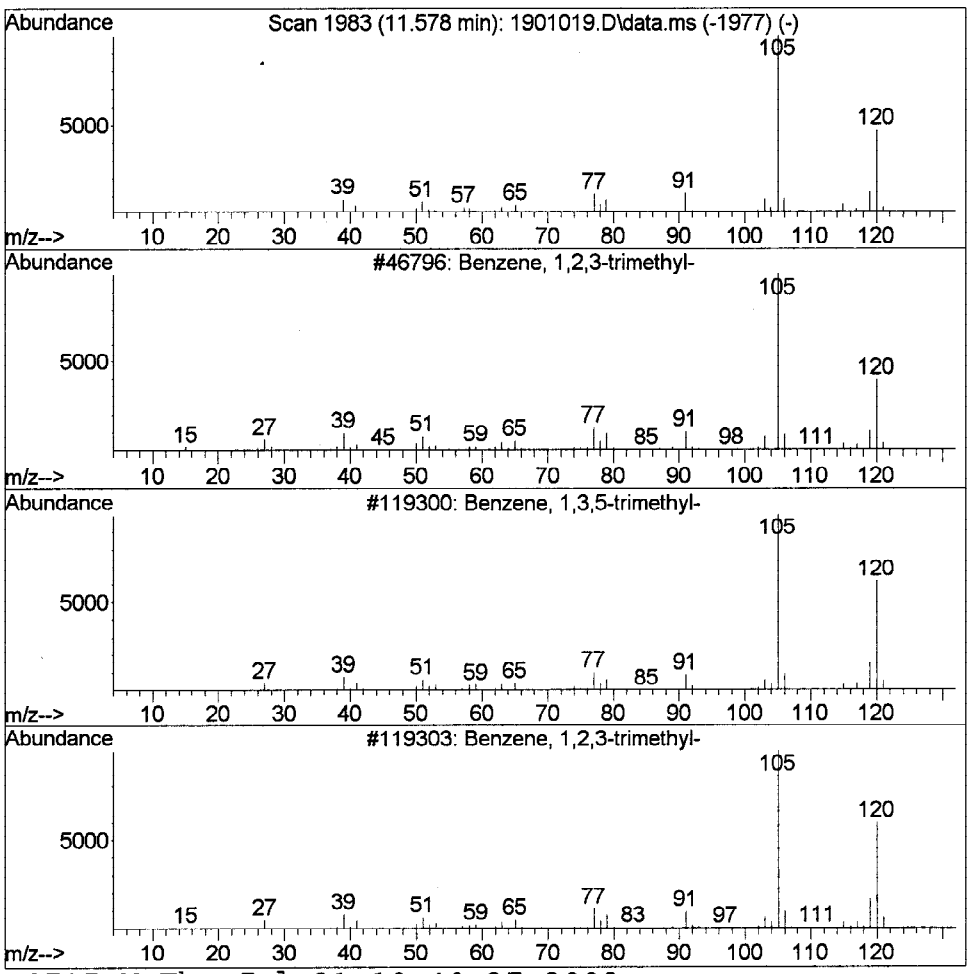
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

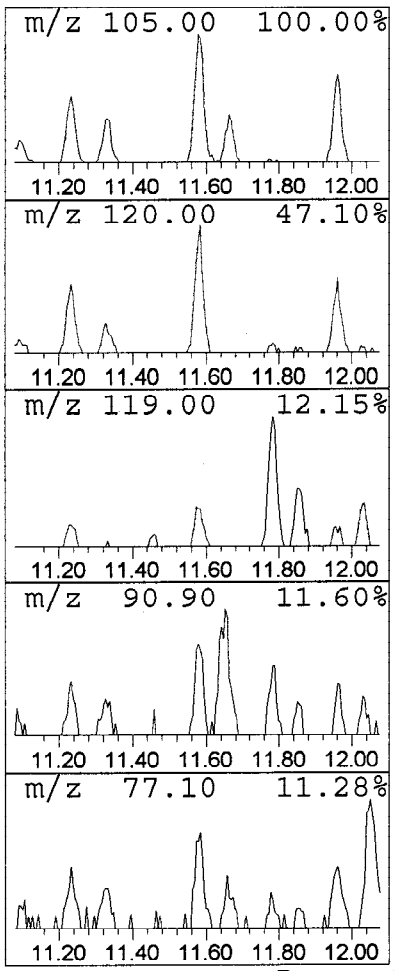
****

Peak Number 6 Benzene, 1,2,3-trimethyl- Concentration Rank 6

R.T.	EstConc	Area	Relative to ISTD	R.T.
11.578	0.58 ug/l	60836	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 1,2,3-trimethyl-	120	C9H12	000526-73-8	97
2	Benzene, 1,3,5-trimethyl-	120	C9H12	000108-67-8	95
3	Benzene, 1,2,3-trimethyl-	120	C9H12	000526-73-8	94
4	Benzene, 1,3,5-trimethyl-	120	C9H12	000108-67-8	94
5	Benzene, 1,2,4-trimethyl-	120	C9H12	000095-63-6	94





Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 07 PT	**Lab Work Order**	08-5433
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5433-01H
Date Collected:	7/29/08	**Sample Matrix:**	Water
Date Received:	7/30/08	**Lab File ID:**	GAS080611
Date Prepared:	8/6/08	**Method Blank:**	GB080608
Date Analyzed:	8/6/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	20.00

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

Analytes	CAS Number	Result	LQL
Methane	74-82-8	12	0.016

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/6/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Inj 07 PT	**Lab Work Order**	08-5433
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-5433-01H
Date Collected:	7/29/08	**Sample Matrix:**	Water
Date Received:	7/30/08	**Lab File ID:**	GAS080609
Date Prepared:	8/6/08	**Method Blank:**	GB080608
Date Analyzed:	8/6/08	**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
Ethane	74-84-0	0.012	0.0016
Ethene	74-85-1	U	0.0024

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/6/08

Evergreen Analytical Laboratory

September 02, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-5433
Client Project ID: Petroglyph CBM Wells

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

001

WORK ORDER Summary Evergreen Analytical, Inc. 08-5626

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

8/6/2008 10:43:36 AM

Client Project ID: Petroglyph Wells

QC Level: LEVEL I+

Comments: PDF + EDD in Pinery Email PDF to both Tom Melland and Konrad Quast per client request. 7/30/08 KSH

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-5626-01A	Rec 1 PT2	Water	8/04/08 2050	8/06/08	RAD226/228	Radium 226/228	☐	☐	8/20/08	1/31/09
08-5626-01B	Rec 1 PT2	Water	8/04/08 2050	8/06/08	ALBETA	Gross Alpha-Beta	☐	☐	8/20/08	1/31/09
08-5626-01B	Rec 1 PT2	Water	8/04/08 2050	8/06/08	TS_SUB	Total Solids for Gross A B	☐	☐	8/20/08	8/11/08
08-5626-01C	Rec 1 PT2	Water	8/04/08 2050	8/06/08	ANIONS_NonDW *	300.0: Anions by IC	☐	☐	8/20/08	8/06/08
08-5626-01D	Rec 1 PT2	Water	8/04/08 2050	8/06/08	F_W	Fluoride	☐	☐	8/20/08	9/01/08
08-5626-01E	Rec 1 PT2	Water	8/04/08 2050	8/06/08	200.8_TR *	200.8: Total Metals	☐	☐	8/20/08	1/31/09
08-5626-01E	Rec 1 PT2	Water	8/04/08 2050	8/06/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	8/20/08	9/01/08
08-5626-01F	Rec 1 PT2	Water	8/04/08 2050	8/06/08	504 *	504: Standard List	☐	☐	8/20/08	8/18/08
08-5626-01G	Rec 1 PT2	Water	8/04/08 2050	8/06/08	MEEP_W *	RSK175M: MEE	☐	☐	8/20/08	8/18/08
08-5626-01H	Rec 1 PT2	Water	8/04/08 2050	8/06/08	524 *	524.2: Standard List	☐	☐	8/20/08	8/18/08
08-5626-01H	Rec 1 PT2	Water	8/04/08 2050	8/06/08	VOATICS	VOA TICS (Largest 10)	☐	☐	8/20/08	8/18/08
08-5626-01I	Rec 1 PT2	Water	8/04/08 2050	8/06/08	CN_TW	Total Cyanide	☐	☐	8/20/08	8/18/08
08-5626-01J	Rec 1 PT2	Water	8/04/08 2050	8/06/08	SULF_W	Total Sulfide	☐	☐	8/20/08	8/11/08
08-5626-01K	Rec 1 PT2	Water	8/04/08 2050	8/06/08	ALK_WGRP *	Alkalinity	☐	☐	8/20/08	8/18/08
08-5626-01K	Rec 1 PT2	Water	8/04/08 2050	8/06/08	PH_W	Discharge Water pH	☐	☐	8/20/08	8/04/08
08-5626-01K	Rec 1 PT2	Water	8/04/08 2050	8/06/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	8/20/08	8/11/08
08-5626-01K	Rec 1 PT2	Water	8/04/08 2050	8/06/08	TSS	Total Suspended Solids (TSS)	☐	☐	8/20/08	8/11/08

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Evergreen Analytical Laboratory Inc.

Page 1 of 1

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☒ PDF ☒ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571
Project ID# Petroglyph Wells
P.O. _____ Quote 10165
Sampler T. Melland

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.

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 (check anaylsis): Radium 226/228	Gross Alpha - Beta	300.0 DW Anions by IC	Fluoride	200.8 Drinking Water Reg. II Required	Total Solids Gross A B	EDB/DBCP	RSK SOP 175M	VOATICS	Total Cyanide	Total Sulfide	TDS, TSS, pH	For Laboratory Use Only
Rec 1 PT2	8/4/08	20:30	4 cooler, 20 bottles				4	1	1	1	1	1	2	3	3	1	1	1	01
										unpreserved Lab to preserve									
Does this analysis involve property transfer? ☐Yes or ☐No							A	B	C	D	E	F	G	H	I	J	K		Sample Fraction

W.O. # 09-562
B.O.F. # 25749
C/S (O) 1319/105
C/S (I) 1389/105
Temp. °C 2.5 / Ice ✓
Seals Present Y / N / NA
Samples Pres. Y / N / NA
Headspace Y / N / NA
By JI

Instructions:

** **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
T. Melland	8-5-08 14:00						8-6-08 1030

Evergreen Analytical, Inc.

Date: *04-Sep-08*

Lab Order: 08-5626
Client Project ID Petroglyph Wells

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 2.5 °C.
Sample(s) were received in good condition, in the proper container, and within holding times.
The pH sample was received out of holding time.
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. JD

QUALITY ASSURANCE (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained. CMS

CLIENT SERVICES

Alkalinity is not listed on the COC but was included in the analyses per the quote and bottle order.
There are no other anomalies to report. PM

GENERAL CHEMISTRY

The flagged Fluoride result only applies to drinking waters that exceed the MCL.
The pH required analysis out of holding time (H).
There are no other anomalies to report. CJ/MM

METALS ANALYSIS

The sample were preserved by the metals group prior to analysis. There are no anomalies to report. HJ

GAS CHROMATOGRAPH

Method 504.1: There are no anomalies to report. AE
Method RSK175M: Laboratory control spikes (LCS/(LCSD) and matrix spike duplicate (MSD) recoveries for Ethene are above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Evergreen Analytical, Inc.

Date: *04-Sep-08*

Lab Order: 08-5626
Client Project ID Petroglyph Wells

CASE NARRATIVE

Method 524.2: The laboratory control spike duplicate (LCSD) recovery for Dichlorodifluoromethane is above QC limits but he laboratory control spike (LCS) recovery is within the QC limit. Since the bias is high and the sample is non-detect for the target analytes, no further action is required.
The Library search (TICs) showed a number of heavier hydrocarbons, C13 through C16.
There are no other anomalies to report. DC/CMS

005

SEP 03 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 8017

WorkOrder: 08-5626

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

06-Aug-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests						
				ALPHABETA	RAD226/228	TS				
08-5626-01A	Water	8/4/2008 8:50:00 PM	1LPHNO3		1					
08-5626-01B	Water	8/4/2008 8:50:00 PM	1LPHNO3	1		1				

Comments:

		Date/Time			Date/Time
Relinquished by:	[signature]	8/8/08	2:05PM	**Received by:**	Diane Tipton
Relinquished by:				**Received by:**	

SEP 0 3 2008

006

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	September 2, 2008
HRI PROJECT	009-93
HRI SERIES NO	H168/08
DATE REC'D.	8/8/2008
CUST. P.O.#	8017

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. H168/08-1

SAMPLE IDENTIFICATION: 08-5626-01A, B - sampled on 08/04/2008 @ 2050

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	3.1(+-2.5)	1.5	SM 7110 B	8/25/2008 @ 0833	AN
Gross Beta (+-Precision*), pCi/l (T)	2.7(+-2.1)	1.8	SM 7110 B	8/25/2008 @ 0833	AN
Radium-226 (+-Precision*), pCi/l (T)	0.4(+-0.3)	0.1	SM 7500-Ra B	8/22/2008 @ 1337	AN
Radium-228 (+-Precision*), pCi/l (T)	0.0(+-0.6)	0.6	EPA Ra-05	8/20/2008 @ 1333	AN
Total Solids, mg/l	294	10	EPA 160.3	8/26/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808;
NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: Rec 1 PT2
Client Project ID: Petroglyph Wells
Date Collected: 8/4/08 2050
Date Received: 8/6/08

Lab Work Order: 08-5626
Lab Sample ID: 08-5626-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0

Prep Method:

Date Prepared: 8/6/08
Date Analyzed: 8/6/08 1237

Method Blank: MBLK 8/6/08

Dilution Factor: 1
Lab Fraction ID: 08-5626-01C

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	19.5	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	0.340	0.20	mg/L
Nitrate-N		0.0543	0.045	mg/L
Sulfate	7778-80-2	64.3	0.50	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/11/08

Evergreen Analytical, Inc.

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

Client Sample ID: Rec 1 PT2
Client Project ID: Petroglyph Wells
Date Collected: 8/4/08 2050
Date Received: 8/6/08

Lab Work Order 08-5626
Lab Sample ID: 08-5626-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 8/8/08
Date Analyzed: 8/8/08
Lab File ID: 7
Method Blank: MBLK 080808
Dilution Factor: 1
Lab Fraction ID: 08-5626-01K

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		134	5.0	mg/L CaCO3
Bicarbonate		114	5.0	mg/L CaCO3
Carbonate		19.6	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 8/12/08
Date Analyzed: 8/12/08
Lab File ID: 52
Method Blank: MBLK 08/12/08
Dilution Factor: 1
Lab Fraction ID: 08-5626-01I

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 8/11/08
Date Analyzed: 8/11/08
Lab File ID: 52
Method Blank: MBLK 08/11/08
Dilution Factor: 1
Lab Fraction ID: 08-5626-01D

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	7.0 *	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 8/6/08
Date Analyzed: 8/6/08 1155
Dilution Factor: 1
Lab Fraction ID: 08-5626-01K

Analytes	CAS Number	Result	LQL	Units
pH		8.86 H	1.00	pH Units

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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/14/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Rec 1 PT2
Client Project ID: Petroglyph Wells
Date Collected: 8/4/08 2050
Date Received: 8/6/08

Lab Work Order 08-5626
Lab Sample ID: 08-5626-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 8/8/08
Date Analyzed: 8/8/08
Lab File ID: 52
Method Blank: MBLK 08/08/08
Dilution Factor: 1
Lab Fraction ID: 08-5626-01J

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 8/11/08
Date Analyzed: 8/11/08
Lab File ID: 8
Method Blank: MBLK 08/11/08
Dilution Factor: 1
Lab Fraction ID: 08-5626-01K

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		325	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 8/11/08
Date Analyzed: 8/11/08
Lab File ID: 13
Method Blank: MBLK 081108
Dilution Factor: 1
Lab Fraction ID: 08-5626-01K

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		U	5.0	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/14/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Rec 1 PT2
Client Project ID: Petroglyph Wells
Date Collected: 8/4/08
Date Received: 8/6/08

Lab Work Order 08-5626
Lab Sample ID: 08-5626-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 8/12/08
Date Analyzed: 8/14/08
Lab File ID: 080812A.B\088SMPL.D
Method Blank: MB-16342
Dilution Factor: 1
Lab Fraction ID: 08-5626-01E

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.0662	0.0100	mg/L
Beryllium	7440-41-7	U	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	3.76	0.400	mg/L
Chromium	7440-47-3	U	0.00220	mg/L
Copper	7440-50-8	U	0.0100	mg/L
Iron	7439-89-6	U	0.200	mg/L
Lead	7439-92-1	U	0.00100	mg/L
Magnesium	7439-95-4	U	0.0500	mg/L
Manganese	7439-96-5	0.0124	0.00500	mg/L
Molybdenum	7439-98-7	0.00592	0.00500	mg/L
Nickel	7440-02-0	U	0.0100	mg/L
Potassium	7440-09-7	0.219	0.125	mg/L
Selenium	7782-49-2	0.00826	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	96.6	0.500	mg/L
Strontium	7440-24-6	U	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.00603	0.00500	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 analysis exceeded analytical holding time
J - Indicates an estimated value when the compound is detected, but is below the LQL
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Definitions:
NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 8/15/2008

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862

(303) 425-6021

Client Sample ID: Rec 1 PT2
Client Project ID: Petroglyph Wells
Date Collected: 8/4/08
Date Received: 8/6/08

Lab Work Order 08-5626
Lab Sample ID: 08-5626-01
Sample Matrix: Water

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 8/8/08
Date Analyzed: 8/8/08

Lab File ID: 80808
Method Blank: MB-16298

Dilution Factor: 1
Lab Fraction ID: 08-5626-01E

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 8/15/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec 1 PT2	**Lab Work Order:**	08-5626
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5626-01F
Date Collected:	8/4/2008	**Sample Matrix:**	Water
Date Received:	8/6/2008	**Lab File ID:**	025.D
Date Prepared:	8/12/2008	**Method Blank:**	MB-16334
Date Analyzed:	8/12/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/13/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec 1 PT2	**Lab Work Order**	08-5626
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5626-01G
Date Collected:	8/4/08	**Sample Matrix:**	Water
Date Received:	8/6/08	**Lab File ID:**	GAS080614
Date Prepared:	8/6/08	**Method Blank:**	GB080608
Date Analyzed:	8/6/08	**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
Ethane	74-84-0	0.0068	0.0016
Ethene	74-85-1	U	0.0024

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**

B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/6/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec 1 PT2	**Lab Work Order**	08-5626
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5626-01G
Date Collected:	8/4/08	**Sample Matrix:**	Water
Date Received:	8/6/08	**Lab File ID:**	GAS080615
Date Prepared:	8/6/08	**Method Blank:**	GB080608
Date Analyzed:	8/6/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	20.00

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

Units: mg/L

Analytes	CAS Number	Result	LQL
Methane	74-82-8	6.8	0.016

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/6/08

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Rec 1 PT2	**Lab Work Order:**	08-5626
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5626-01H
Date Collected:	8/4/2008	**Sample Matrix:**	Water
Date Received:	8/6/2008	**Lab File ID:**	\VOA40807\1001010.D
Date Prepared:	8/7/2008	**Method Blank:**	MB4080708a
Date Analyzed:	8/7/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

VOLATILE COMPOUNDS

Method: E524.2
Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst

Approved

Qualifiers: **See case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* - Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 8/11/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Rec 1 PT2	**Lab Work Order:**	08-5626
Client Project ID:	Petroglyph Wells	**Lab Sample ID:**	08-5626-01H
Date Collected:	8/4/2008	**Sample Matrix:**	Water
Date Received:	8/6/2008	**Lab File ID:**	\VOA40807\1001010.D
Date Prepared:	8/7/2008	**Method Blank:**	MB4080708a
Date Analyzed:	8/7/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	U		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	106	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	99	**QC Limits:**	70-130 %REC

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

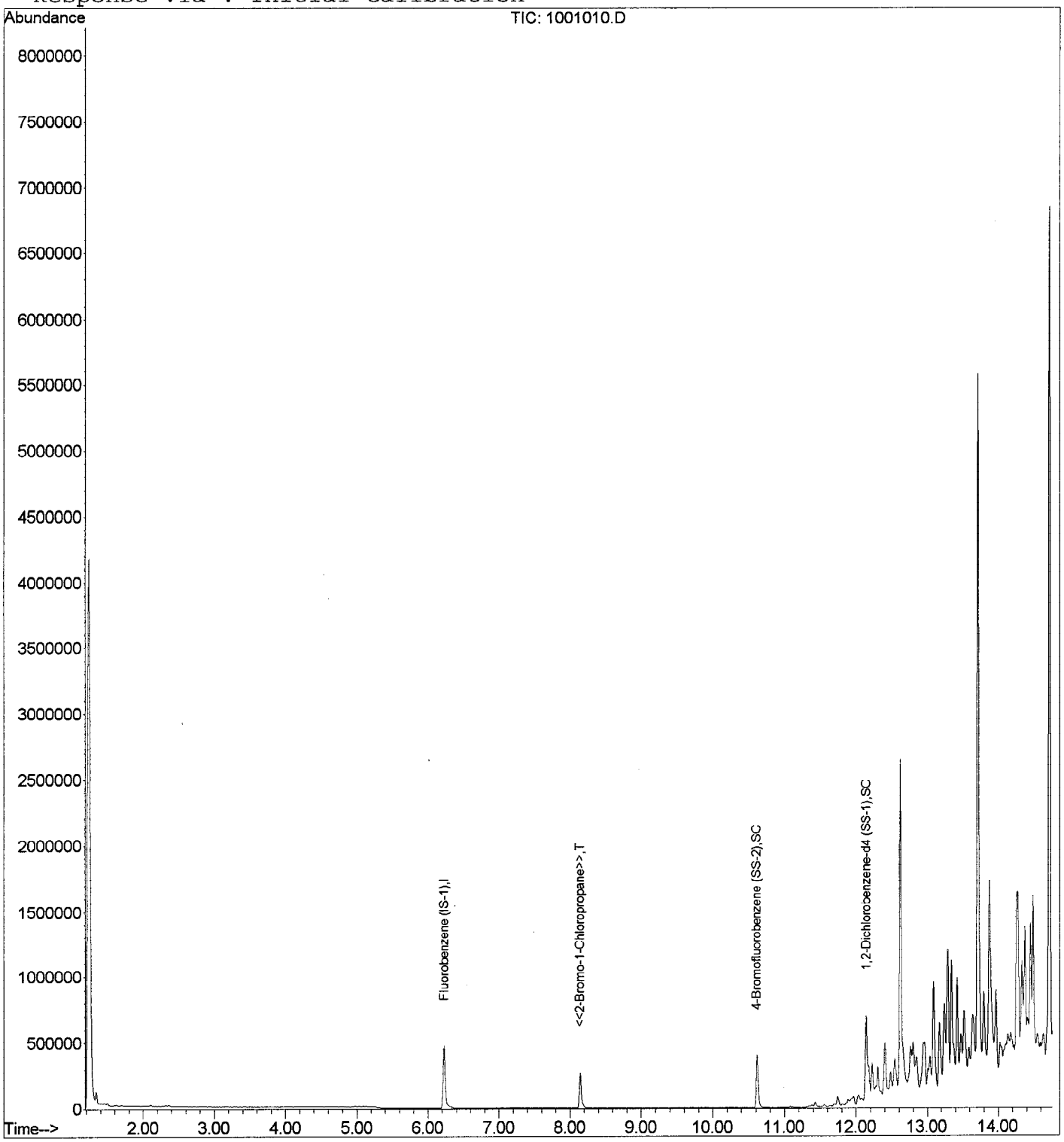
Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 8/11/2008

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 11 14:44 2008 Quant Results File: 5240716.RES

Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Last Update : Thu Jul 17 08:54:35 2008
Response via : Initial Calibration



8/14/08

017

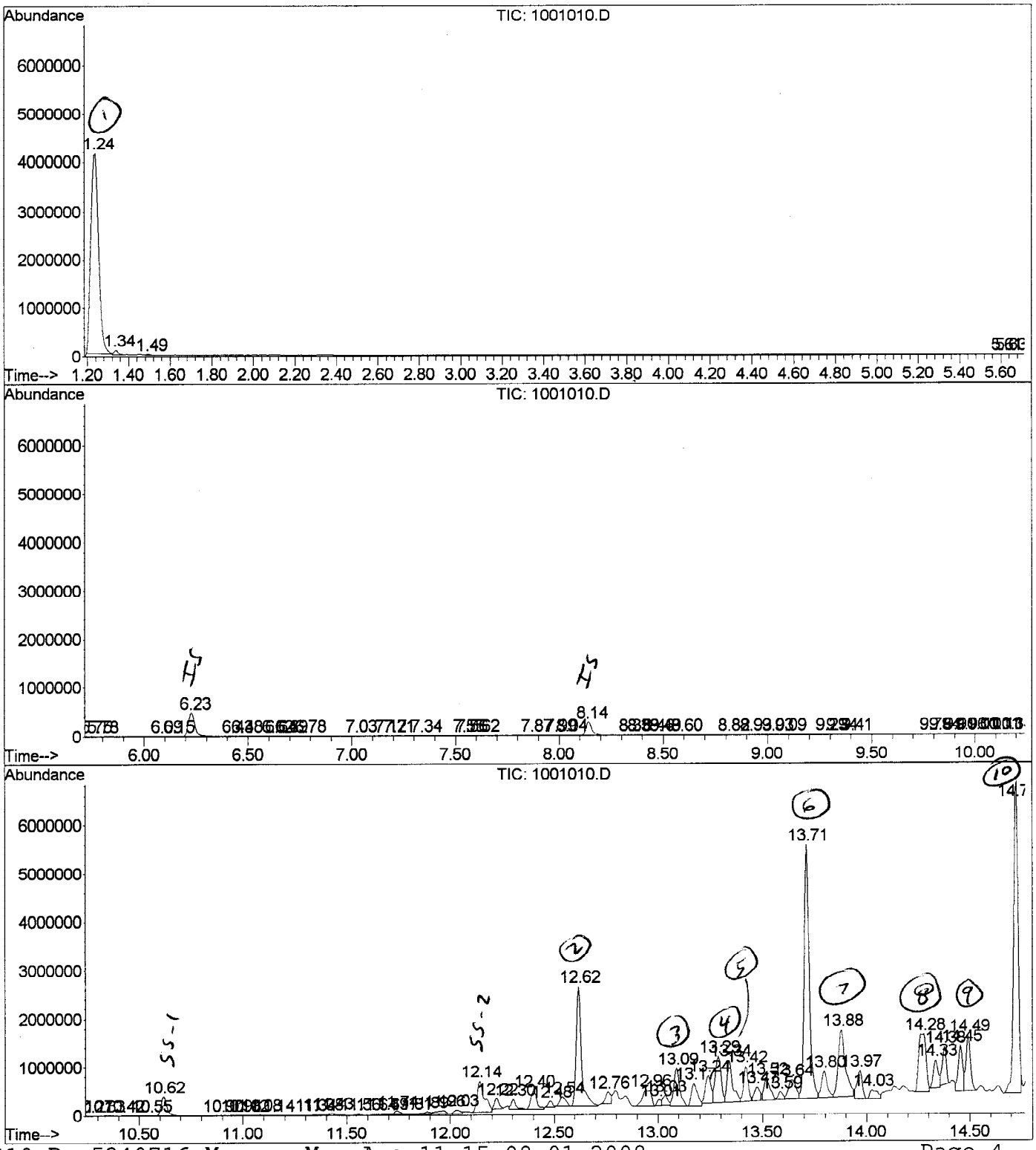
Tentatively Identified Compound (LSC) summary

perator ID: Don Chamot Date Acquired: 7 Aug 2008 1:59 pm
ata File: C:\MSDCHEM\1\DATA\VOA40807\1001010.D
ame: 08-5626-01H
isc: SAMP 524
ethod: C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
itle: VOA4 524.2 Revision 4.1
ibrary Searched: C:\DATABASE\NIST98.L

TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	Internal Standard RT	Internal Standard Resp	Internal Standard Conc
arbon dioxide	1.24	51.4	ug/l	10798900	1	6.23	1050600	5.0
ndecane	12.62	21.1	ug/l	4426240	1	6.23	1050600	5.0
rans-Decalin, 2-...	13.09	7.6	ug/l	1589280	1	6.23	1050600	5.0
aphthalene, deca...	13.29	9.0	ug/l	1884410	1	6.23	1050600	5.0
ndecane, 2-methyl-	13.34	7.8	ug/l	1632220	1	6.23	1050600	5.0
ecane, 6-ethyl-2...	13.71	41.9	ug/l	8793740	1	6.23	1050600	5.0
odecane, 6-methyl-	13.88	15.9	ug/l	3349120	1	6.23	1050600	5.0
~~Tetracosanol~~ *	14.28	14.3	ug/l	3009140	1	6.23	1050600	5.0
ridecane, 7-methyl-	14.49	7.9	ug/l	1667420	1	6.23	1050600	5.0
exadecane	14.73	46.0	ug/l	9671690	1	6.23	1050600	5.0

* UNIDENTIFIED

File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D
Operator : Don Chamot
Acquired : 7 Aug 2008 1:59 pm using AcqMethod 5242BASE
Instrument : Instrumen
Sample Name: 08-5626-01H
Misc Info : SAMP 524
Vial Number: 10
Quant File :5240716.RES (RTE Integrator)



Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

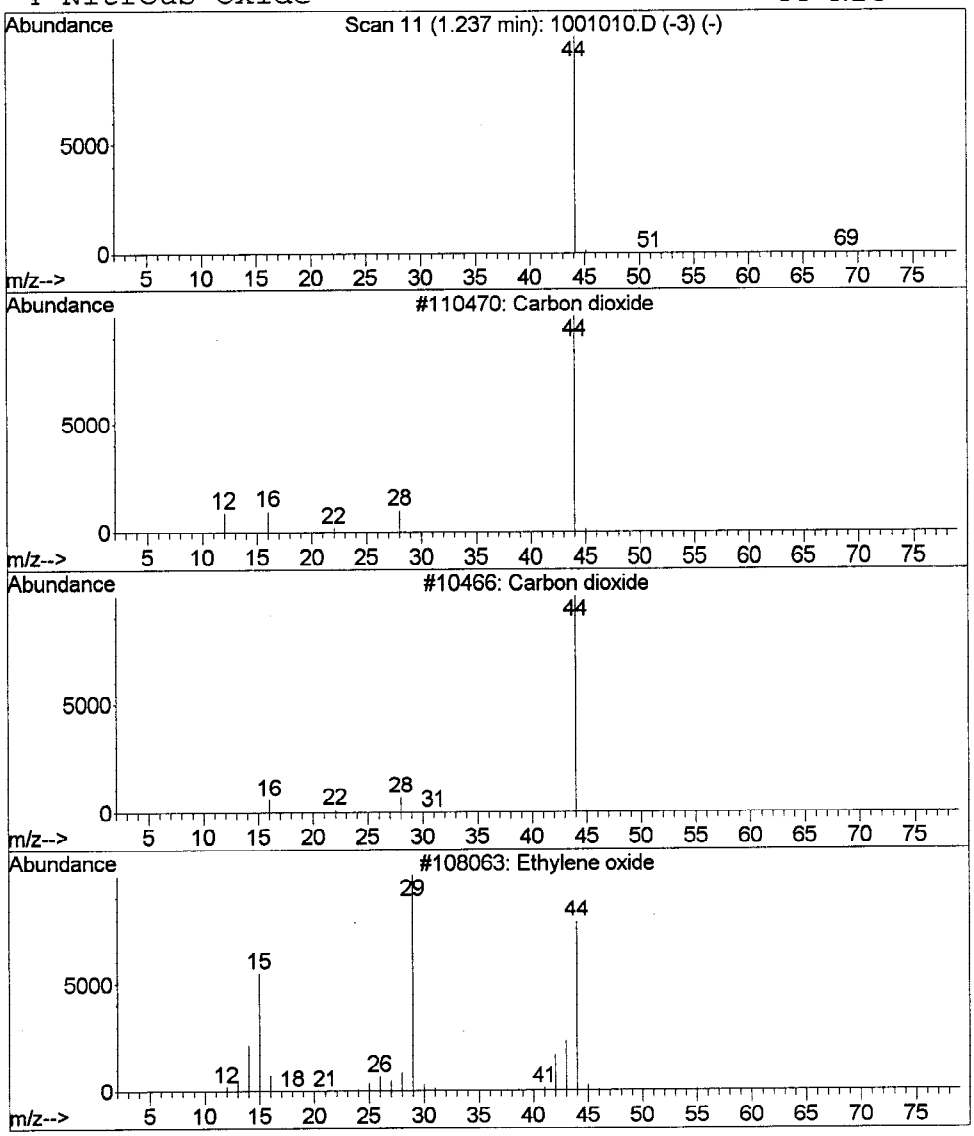
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Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

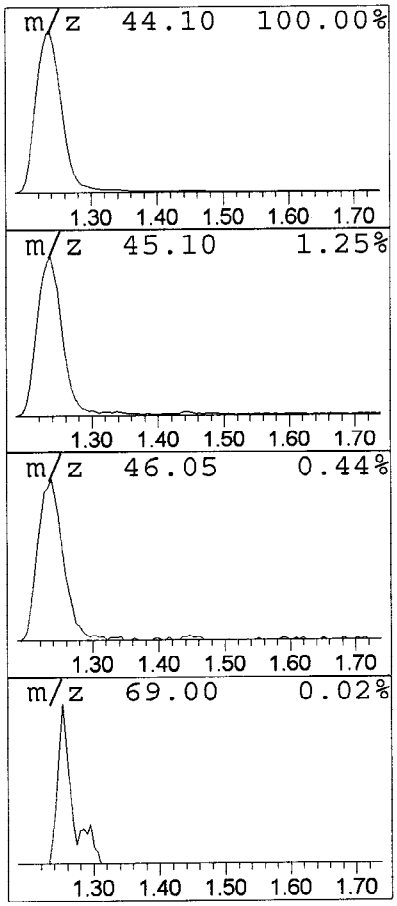
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Peak Number 1 Carbon dioxide Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
1.24	51.39 ug/l	10798900	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Carbon dioxide	44	CO2	000124-38-9	4
2	Carbon dioxide	44	CO2	000124-38-9	4
3	Ethylene oxide	44	C2H4O	000075-21-8	3
4	Nitrous Oxide	44	N2O	010024-97-2	3





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

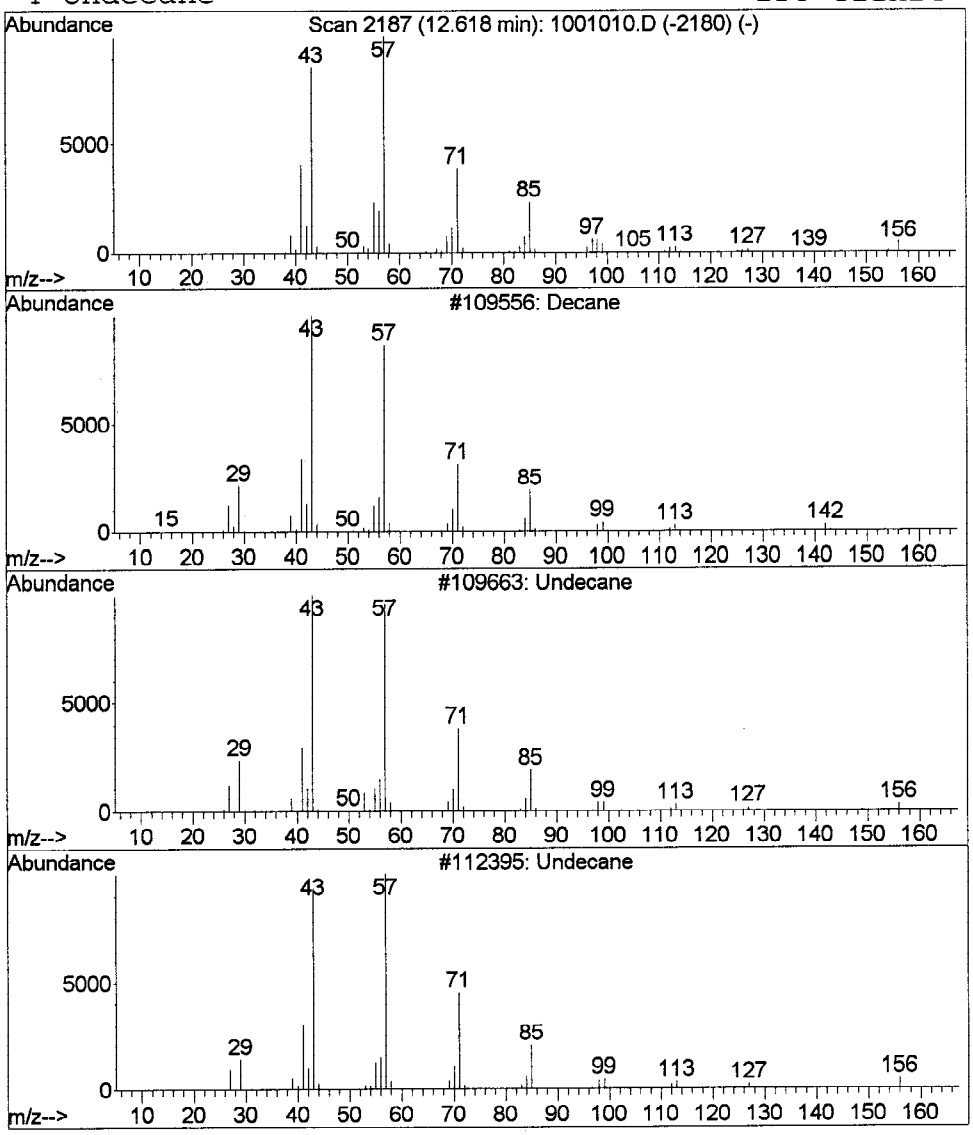
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Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

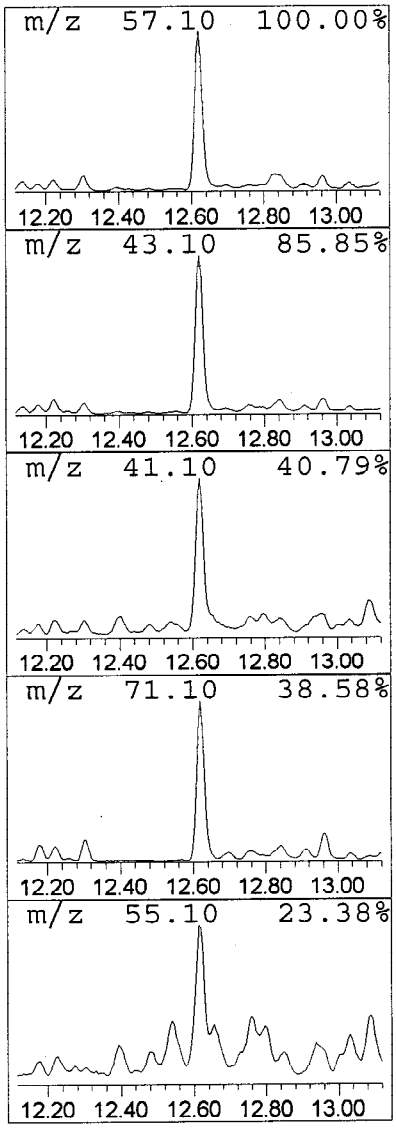
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Peak Number 2 UNDecane Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.62	21.07 ug/l	4426240	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Decane	142	C10H22	000124-18-5	78
2	Undecane	156	C11H24	001120-21-4	93
3	Undecane	156	C11H24	001120-21-4	52
4	Undecane	156	C11H24	001120-21-4	80





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

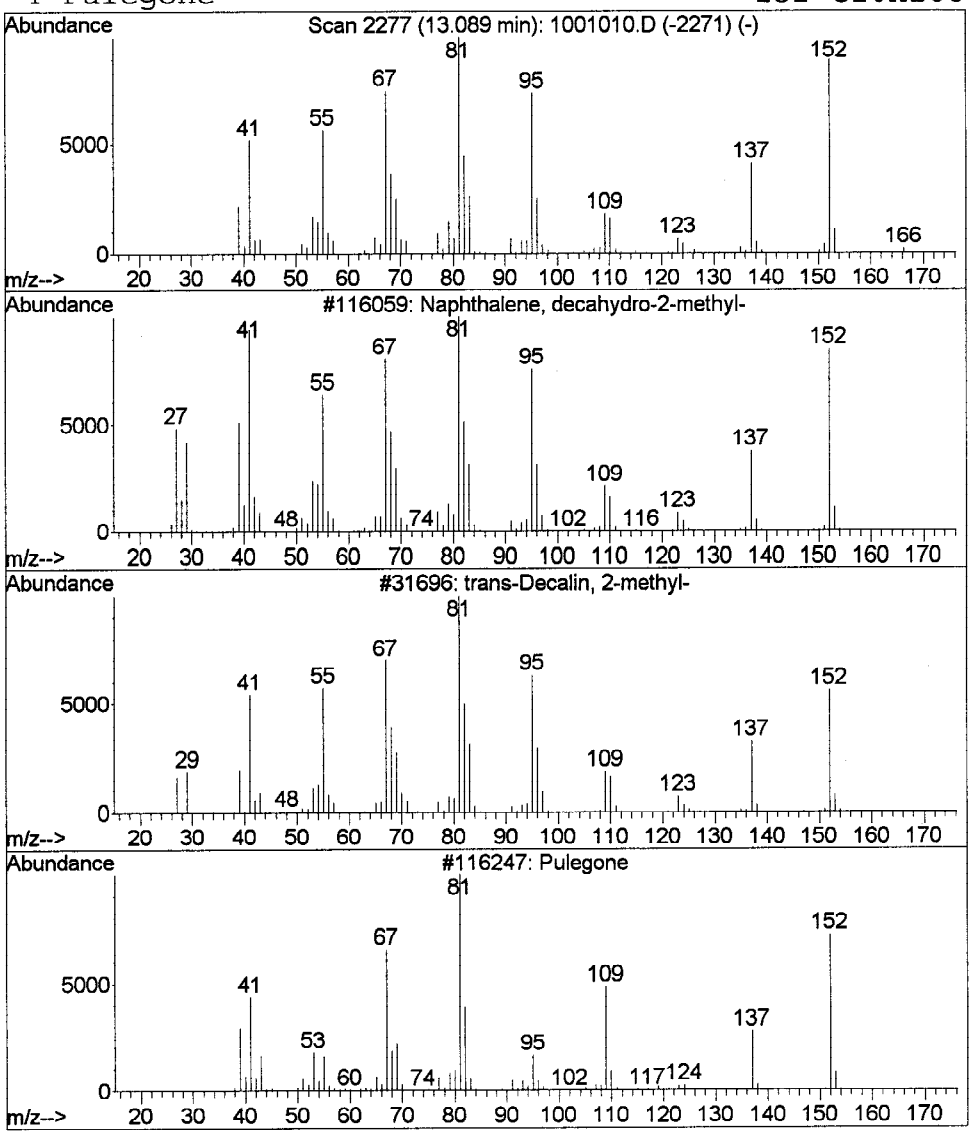
Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

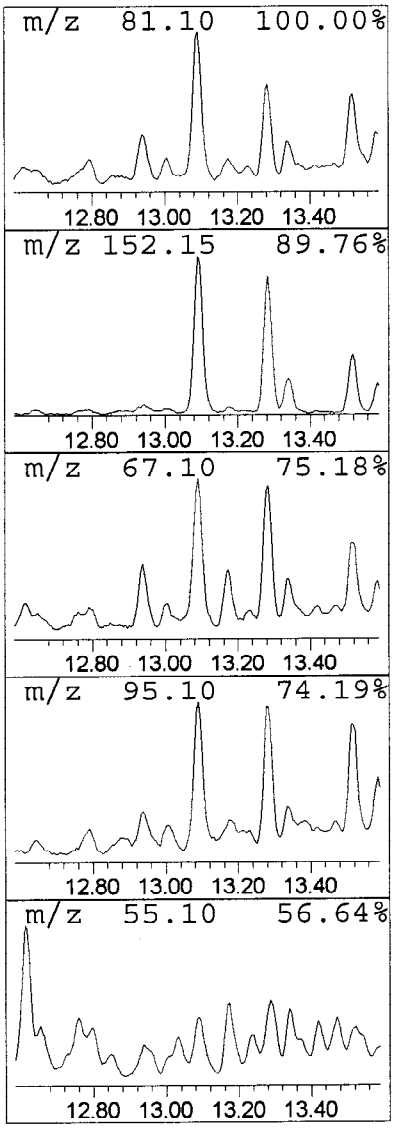
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Peak Number 3 Naphthalene, decahydro-2-me... Concentration Rank 10

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.09	7.56 ug/l	1589280	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Naphthalene, decahydro-2-methyl-	152	C11H20	002958-76-1	91
2	trans-Decalin, 2-methyl-	152	C11H20	1000152-47-3	87
3	Pulegone	152	C10H16O	000089-82-7	68
4	Pulegone	152	C10H16O	000089-82-7	68





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

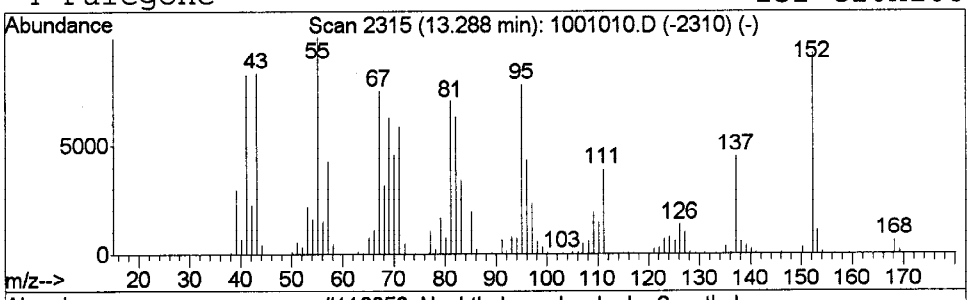
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Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

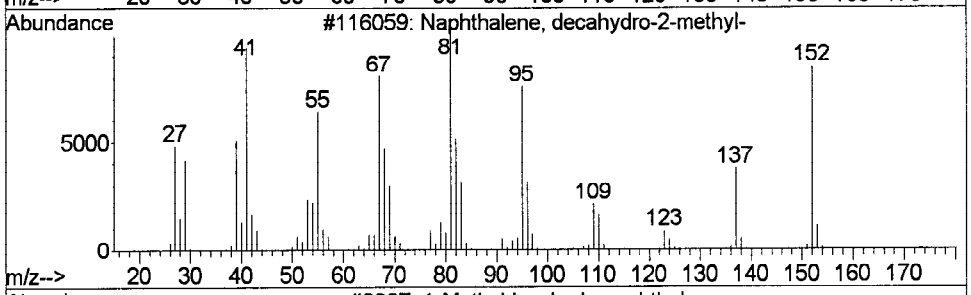
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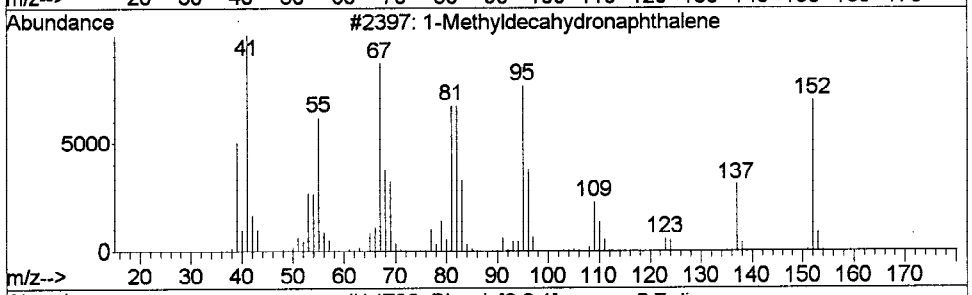
Peak Number 4 Naphthalene, decahydro-2-me... Concentration Rank 7

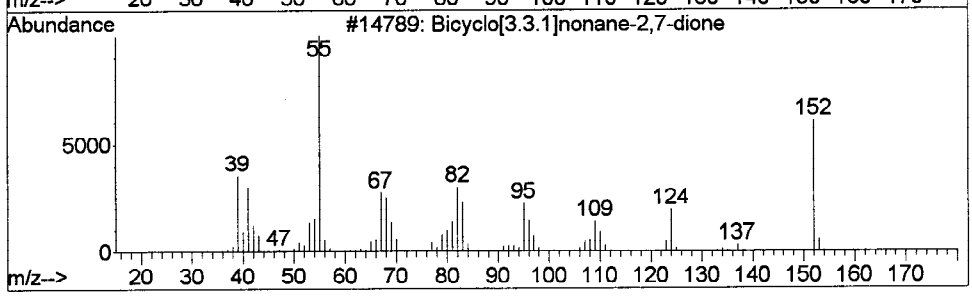
R.T.	EstConc	Area	Relative to ISTD	R.T.
13.29	8.97 ug/l	1884410	Fluorobenzene (IS-1)	6.23

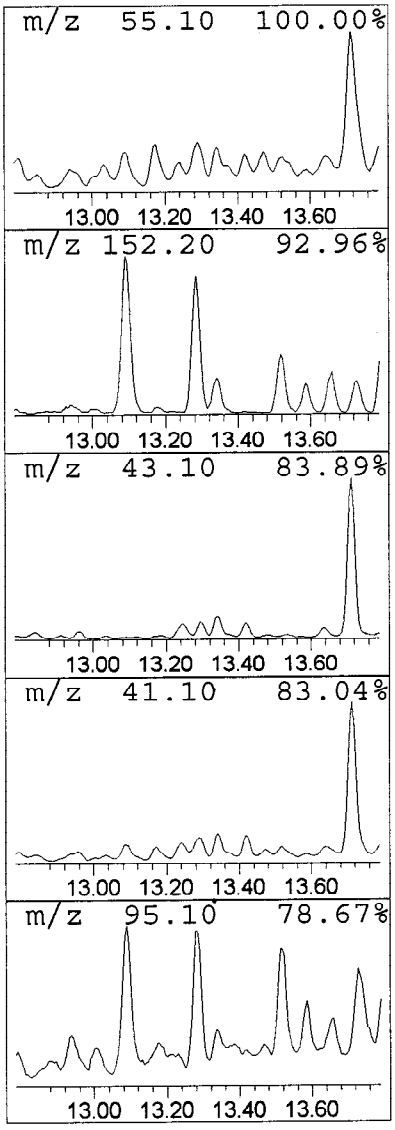
Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Naphthalene, decahydro-2-methyl-	152	C11H20	002958-76-1	90
2	1-Methyldecahydronaphthalene	152	C11H20	002958-75-0	43
3	Bicyclo[3.3.1]nonane-2,7-dione	152	C9H12O2	1000210-30-3	25
4	Pulegone	152	C10H16O	000089-82-7	49











Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

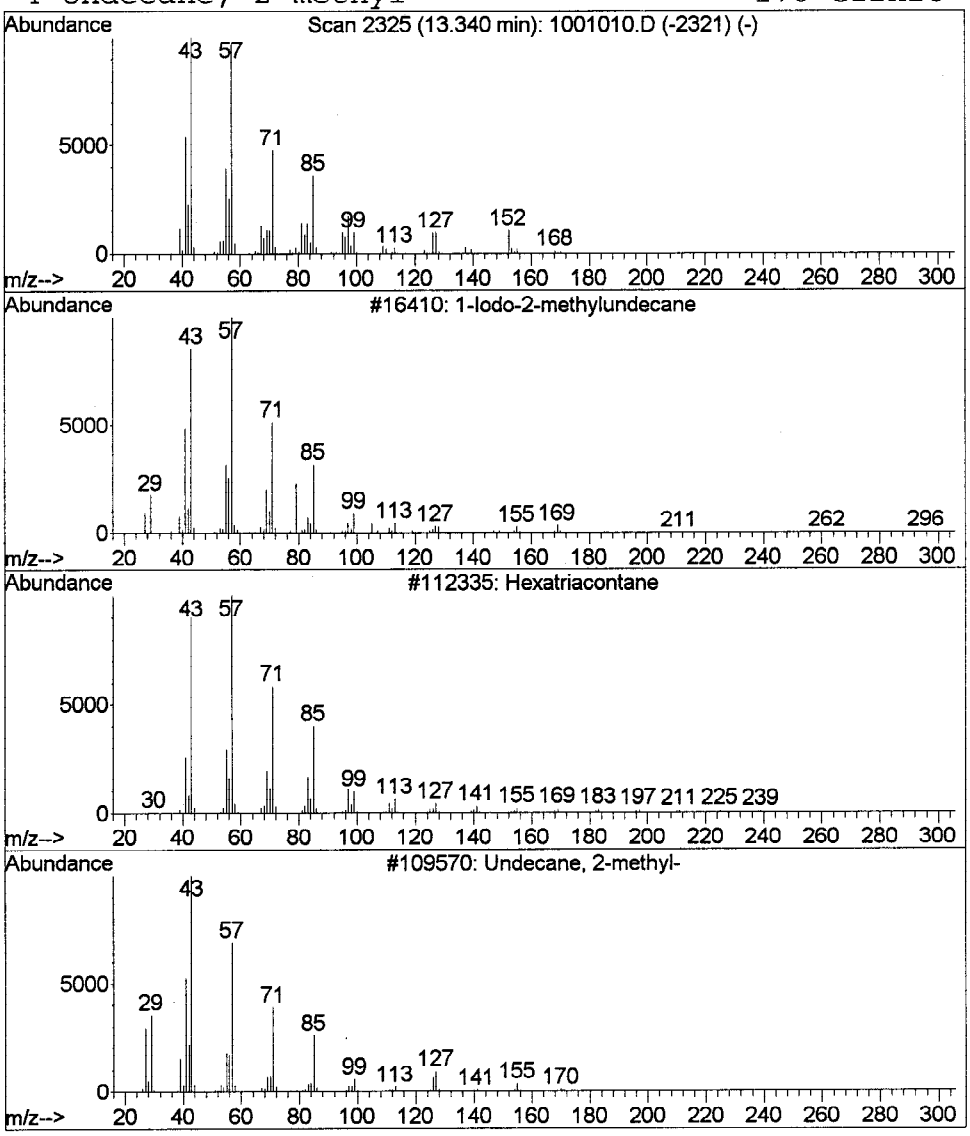
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Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

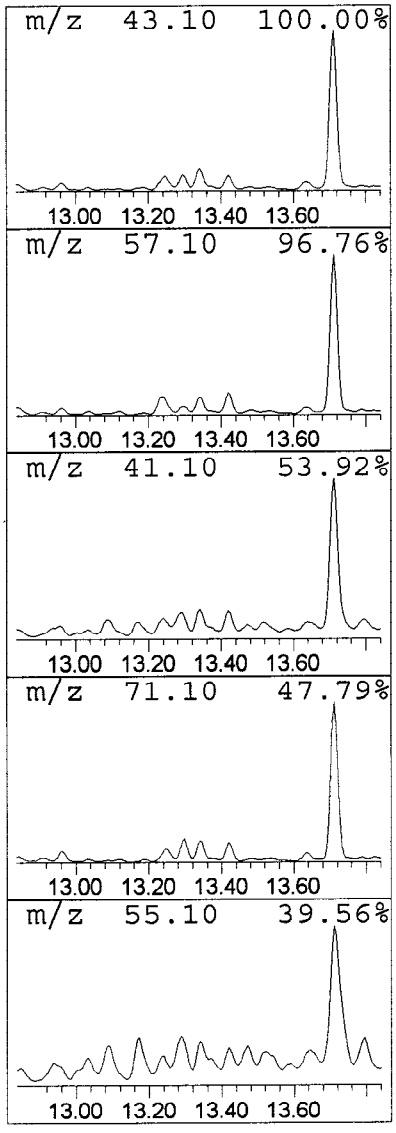
****

Peak Number 5 ~~1-Iodo-2-methylundecane~~ Concentration Rank 9

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.34	7.77 ug/l	1632220	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	1-Iodo-2-methylundecane	296	C12H25I	073105-67-6	59
2	Hexatriacontane	507	C36H74	000630-06-8	53
3	Undecane, 2-methyl-	170	C12H26	007045-71-8	59
4	Undecane, 2-methyl-	170	C12H26	007045-71-8	76





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

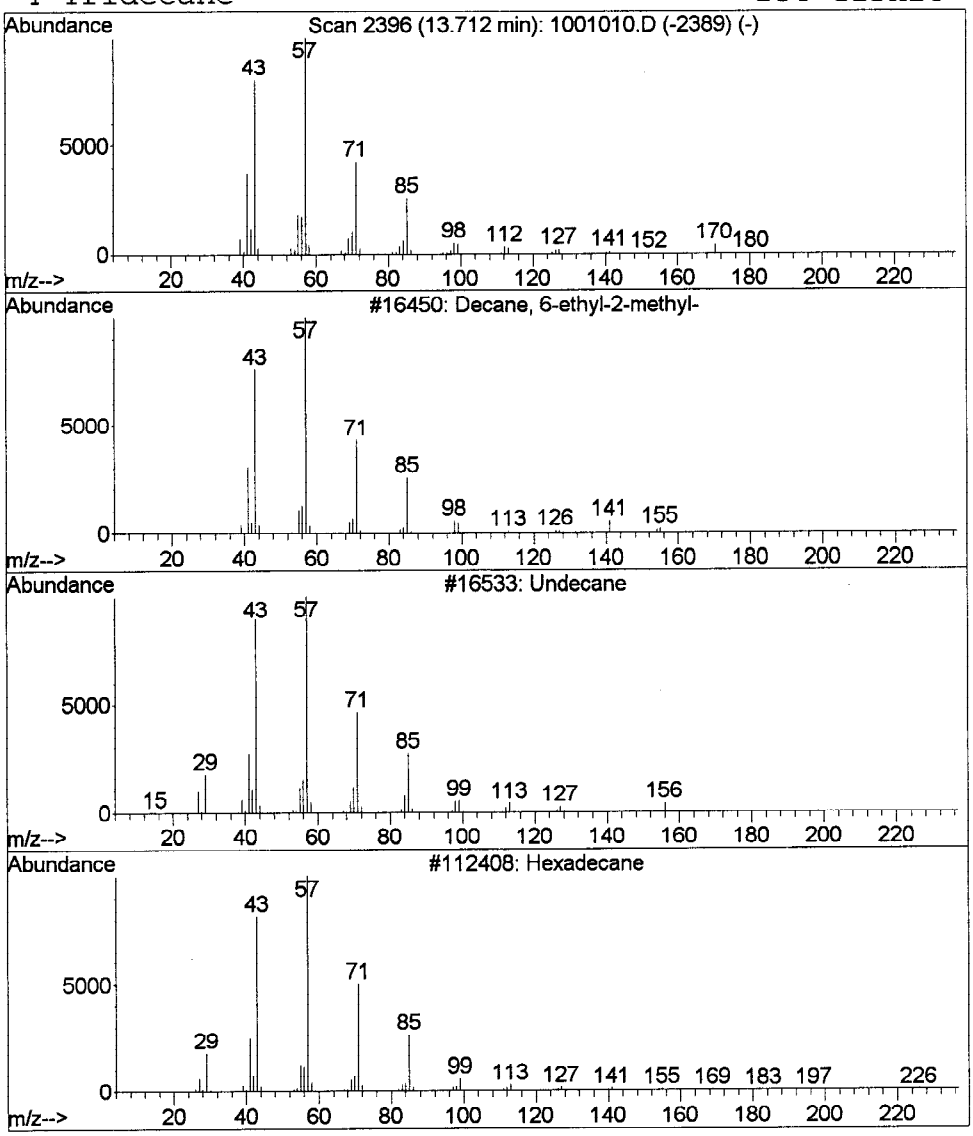
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Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

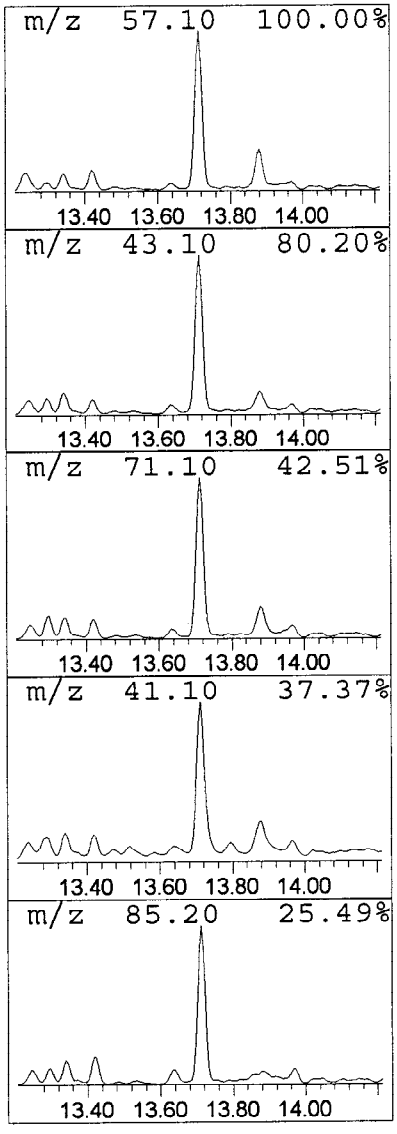
****

Peak Number 6 Decane, 6-ethyl-2-methyl- Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.71	41.85 ug/l	8793740	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Decane, 6-ethyl-2-methyl-	184	C13H28	062108-21-8	83
2	Undecane	156	C11H24	001120-21-4	78
3	Hexadecane	226	C16H34	000544-76-3	86
4	Tridecane	184	C13H28	000629-50-5	90





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

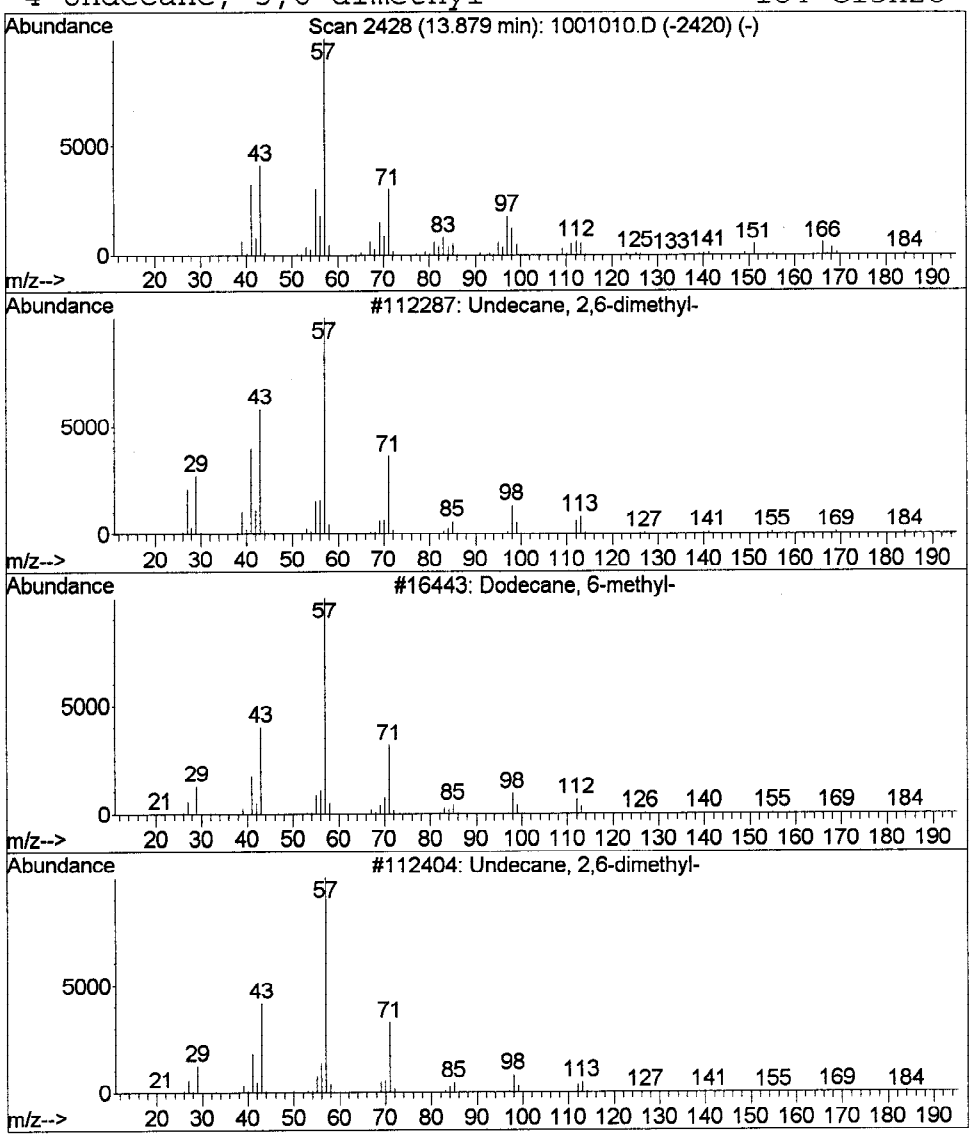
Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

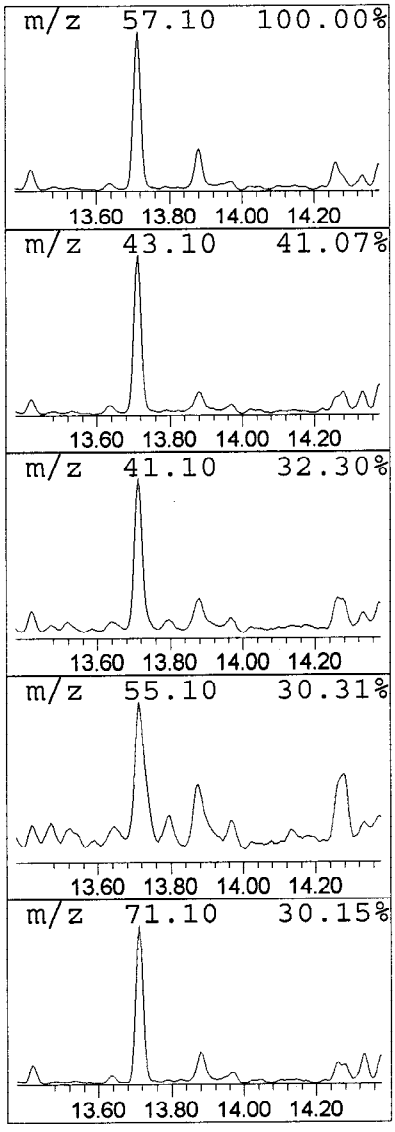
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Peak Number 7 ~~Undecane, 2,6-dimethyl-~~ Concentration Rank 5

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.88	15.94 ug/l	3349120	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Undecane, 2,6-dimethyl-	184	C13H28	017301-23-4	60
2	Dodecane, 6-methyl-	184	C13H28	006044-71-9	70
3	Undecane, 2,6-dimethyl-	184	C13H28	017301-23-4	58
4	Undecane, 3,6-dimethyl-	184	C13H28	017301-28-9	38





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

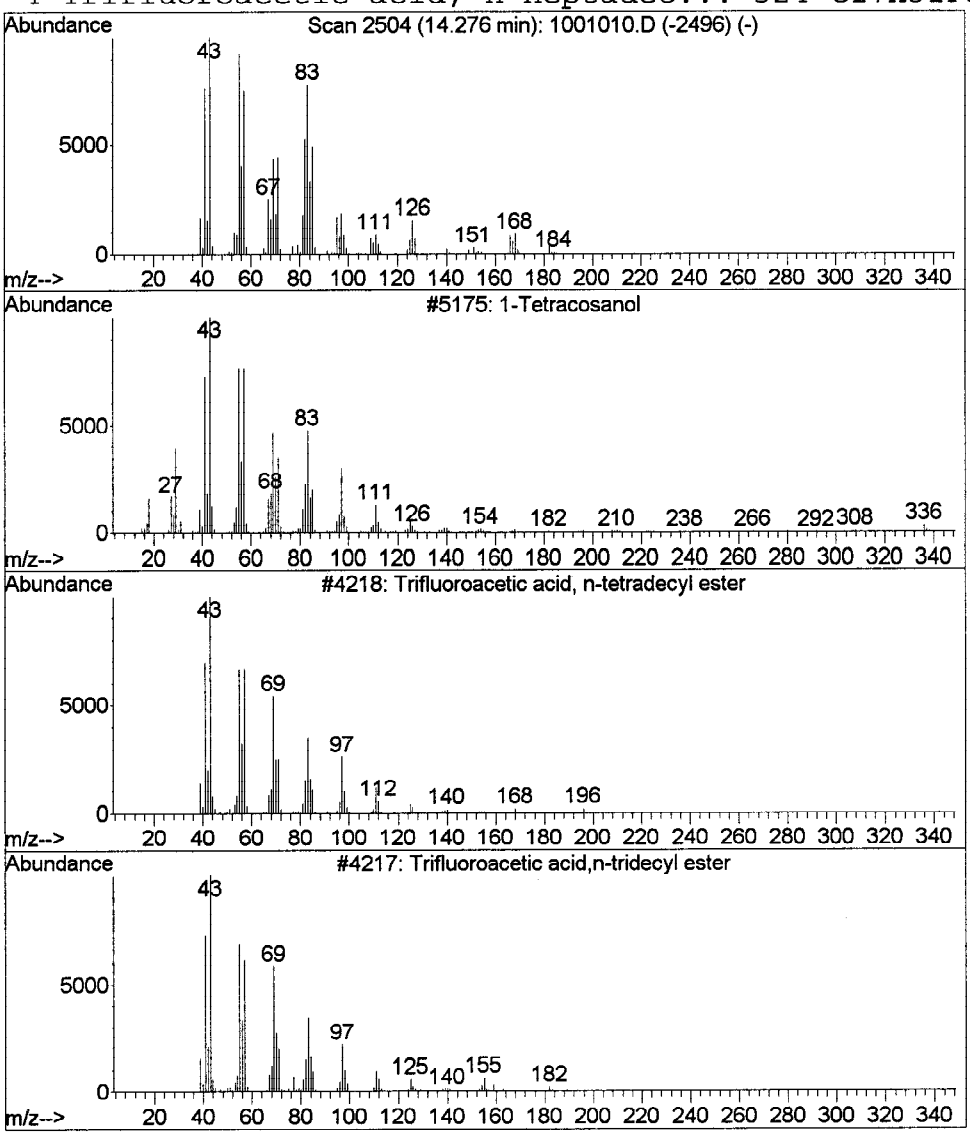
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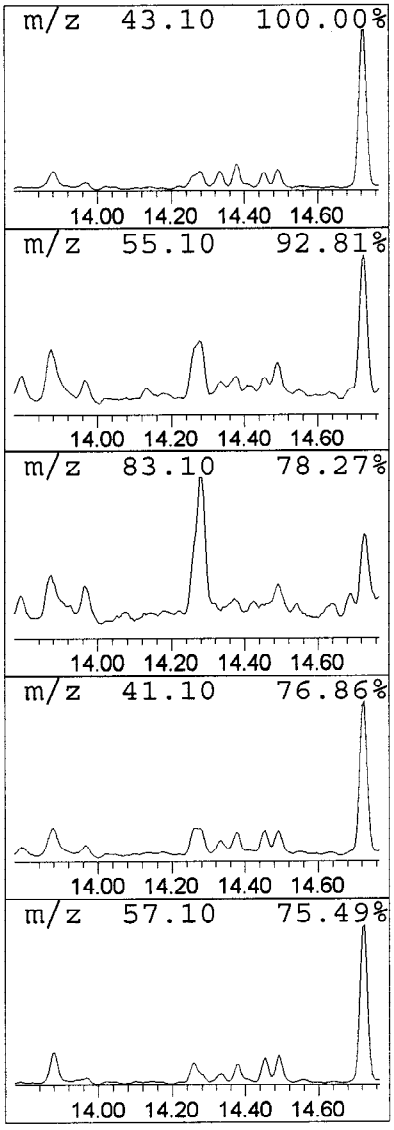
Peak Number 8 1-~~Tetracosanol~~ UNIDENTIFIED Concentration Rank 6

CMS 9/3/08

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.28	14.32 ug/l	3009140	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	1-Tetracosanol	354	C24H50O	000506-51-4	22 (POOR MATCH)
2	Trifluoroacetic acid, n-tetradec...	310	C16H29F3O2	1000216-79-0	18
3	Trifluoroacetic acid,n-tridecyl ...	296	C15H27F3O2	1000216-78-8	18
4	Trifluoroacetic acid, n-heptadec...	324	C17H31F3O2	1000216-79-2	18





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

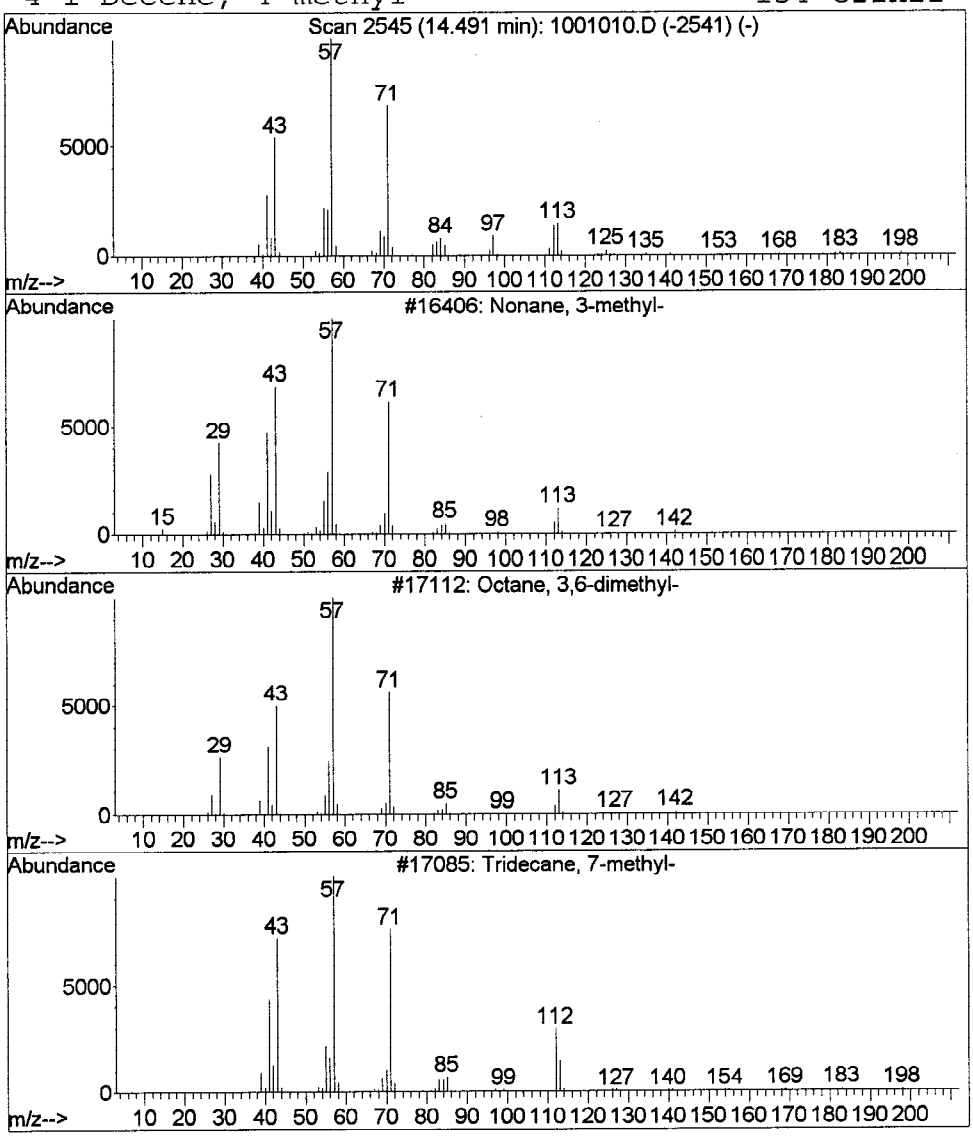
Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

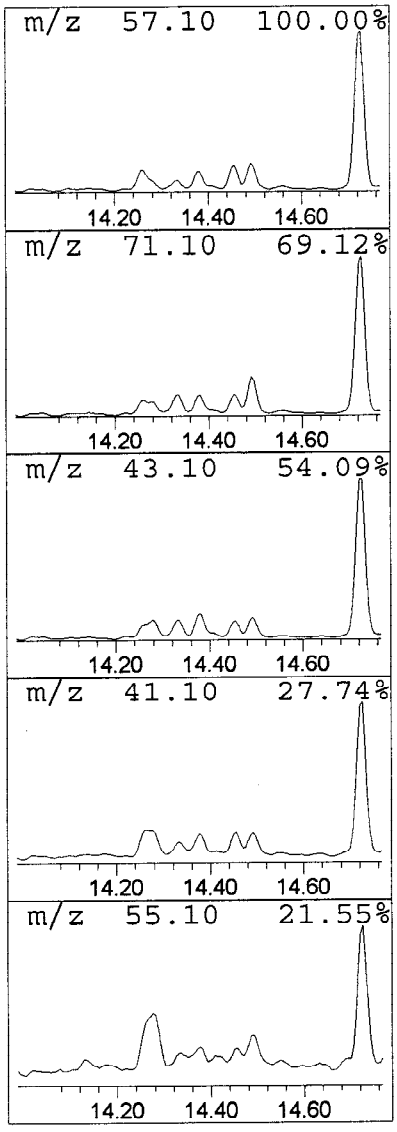
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Peak Number 9 Nonane, 3-methyl- Concentration Rank 8

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.49	7.94 ug/l	1667420	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Nonane, 3-methyl-	142	C10H22	005911-04-6	72
2	Octane, 3,6-dimethyl-	142	C10H22	015869-94-0	72
3	Tridecane, 7-methyl-	198	C14H30	026730-14-3	64
4	1-Decene, 4-methyl-	154	C11H22	013151-29-6	35





Library Search Compound Report

Data File : C:\MSDCHEM\1\DATA\VOA40807\1001010.D Vial: 10
Acq On : 7 Aug 2008 1:59 pm Operator: Don Chamot
Sample : 08-5626-01H Inst : Instrumen
Misc : SAMP 524 Multiplr: 1.00
MS Integration Params: RTEINT.P

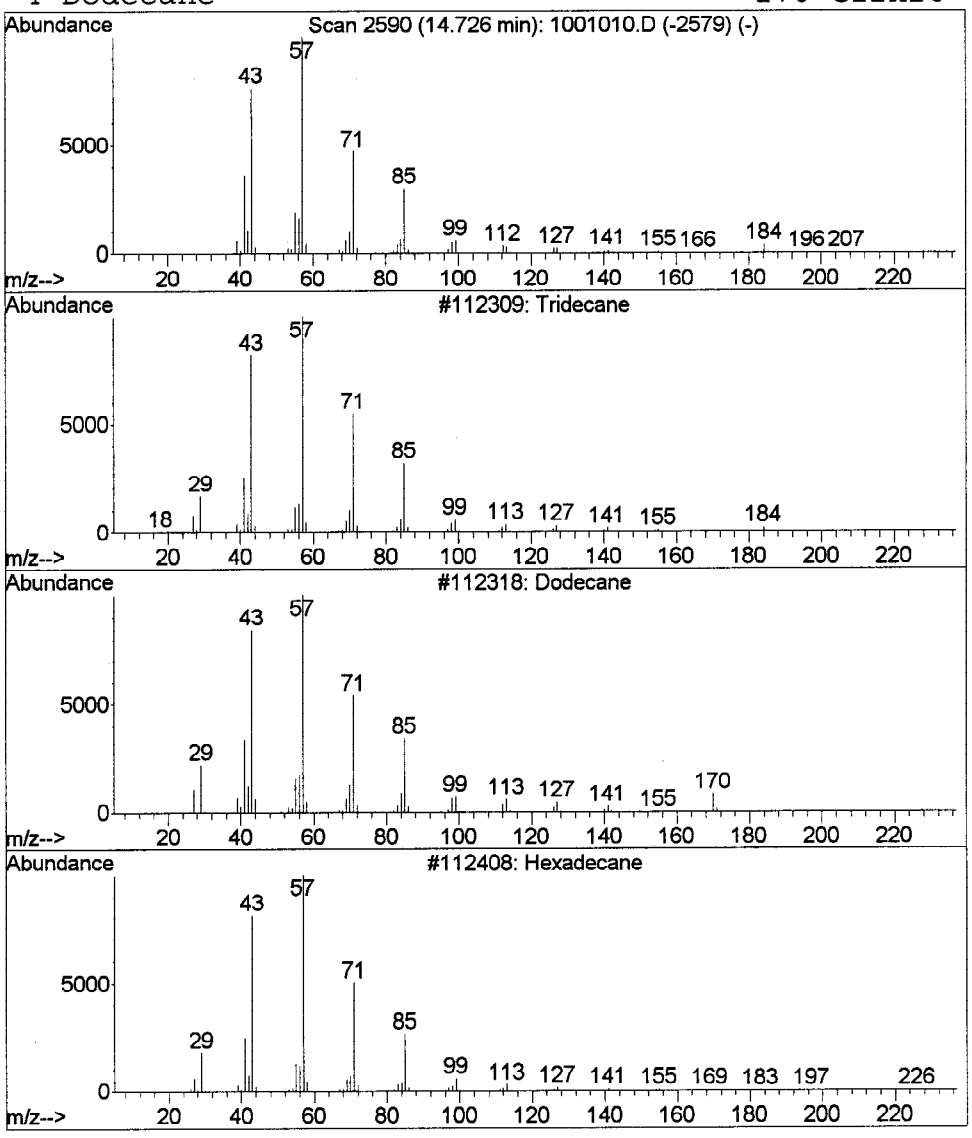
Quant Method : C:\MSDCHEM\1\METHODS\5240716.M (RTE Integrator)
Title : VOA4 524.2 Revision 4.1
Library : C:\DATABASE\NIST98.L

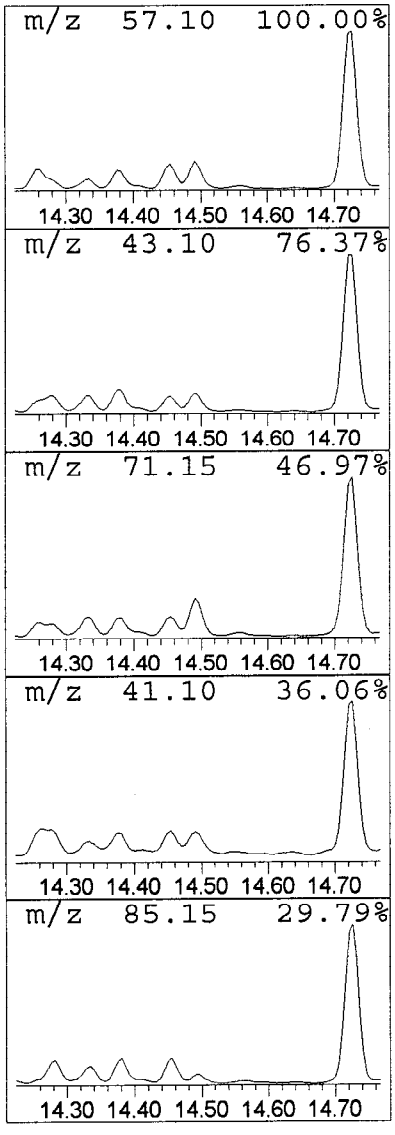
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Peak Number 10 ~~Tridecane~~ HEXADECANE Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.73	46.03 ug/l	9671690	Fluorobenzene (IS-1)	6.23

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Tridecane	184	C13H28	000629-50-5	58
2	Dodecane	170	C12H26	000112-40-3	83
3	Hexadecane	226	C16H34	000544-76-3	90
4	Dodecane	170	C12H26	000112-40-3	78





QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: R41167

Sample ID: MBLK 8/6/08	SampType: MBLK	TestCode: ANIONS_W	Run ID: IC-DX300_080806A	Prep Date: 8/6/08	Units: mg/L
	Batch ID: R41167	TestNo: E300.0	FileID:	Analysis Date: 8/6/08	SeqNo: 723326

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0	0.50									
Nitrite-N	0	0.0040									
Bromide	0	0.050									
Nitrate-N	0	0.010									
Sulfate	0	0.50									

Sample ID: LCS 8/6/08	SampType: LCS	TestCode: ANIONS_W	Run ID: IC-DX300_080806A	Prep Date: 8/6/08	Units: mg/L
	Batch ID: R41167	TestNo: E300.0	FileID:	Analysis Date: 8/6/08	SeqNo: 723331

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	18.6	1.0	20	0	93	90	110	0	0		
Nitrite-N	6.205	0.0080	6.09	0	102	90	110	0	0		
Bromide	19.46	0.10	20	0	97.3	90	110	0	0		
Nitrate-N	4.304	0.020	4.518	0	95.3	90	110	0	0		
Sulfate	28.63	1.0	30	0	95.4	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *14-Aug-08*

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 080808**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080808C**	Prep Date: **8/8/2008**	Units: **mg/L CaCO3**
	Batch ID: **R41163**	TestNo: **SM2320B**	FileID: **47**	Analysis Date: **8/8/2008**	SeqNo: **723273**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080808C**	Prep Date: **8/8/2008**	Units: **mg/L CaCO3**
	Batch ID: **R41163**	TestNo: **SM2320B**	FileID: **48**	Analysis Date: **8/8/2008**	SeqNo: **723274**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	99.1	5.0	100	0	99.1	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 08/12/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080812A**	Prep Date: **8/12/2008**	Units: **mg/L**
	Batch ID: **R41235**	TestNo: **SM4500-CN**	FileID: **50**	Analysis Date: **8/12/2008**	SeqNo: **724681**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080812A**	Prep Date: **8/12/2008**	Units: **mg/L**
	Batch ID: **R41235**	TestNo: **SM4500-CN**	FileID: **51**	Analysis Date: **8/12/2008**	SeqNo: **724682**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.09682	0.010	0.104	0	93.1	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID **MBLK 08/11/08**	SampType: **MBLK**	TestCode: **F_W**	Run ID: **F_080811A**	Prep Date: **8/11/2008**	Units: **mg/L**
	Batch ID: **R41204**	TestNo: **SM 4500-F C**	FileID: **47**	Analysis Date: **8/11/2008**	SeqNo: **724042**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID **LCS**	SampType: **LCS**	TestCode: **F_W**	Run ID: **F_080811A**	Prep Date: **8/11/2008**	Units: **mg/L**
	Batch ID: **R41204**	TestNo: **SM 4500-F C**	FileID: **48**	Analysis Date: **8/11/2008**	SeqNo: **724043**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	9.961	0.20	10	0	99.6	95	105	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID **LCS-R41096**	SampType: **LCS**	TestCode: **PH_W**	Run ID: **PH_080806A**	Prep Date: **8/6/2008**	Units: **pH Units**
	Batch ID: **R41096**	TestNo: **SM 4500H+ B**	FileID:	Analysis Date: **8/6/2008**	SeqNo: **722125**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.02	1.00	8	0	100	99.3	100.7	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 08/08/08**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080808A**	Prep Date: **8/8/2008**	Units: **mg/L**
	Batch ID: **R41139**	TestNo: **SM 4500-S C/**	FileID: **50**	Analysis Date: **8/8/2008**	SeqNo: **722991**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080808A**	Prep Date: **8/8/2008**	Units: **mg/L**
	Batch ID: **R41139**	TestNo: **SM 4500-S C/**	FileID: **51**	Analysis Date: **8/8/2008**	SeqNo: **722992**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.6	0.50	1.7	0	94.1	60	120	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK 08/11/08**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080812C**	Prep Date: **8/11/2008**	Units: **mg/L**
	Batch ID: **R41234**	TestNo: **SM 2540C**	FileID: **1**	Analysis Date: **8/11/2008**	SeqNo: **724633**

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_080812C**	Prep Date: **8/11/2008**	Units: **mg/L**
	Batch ID: **R41234**	TestNo: **SM 2540C**	FileID: **2**	Analysis Date: **8/11/2008**	SeqNo: **724634**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	403	10.0	400	0	101	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 081108**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080811A**	Prep Date: **8/11/2008**	Units: **mg/L**
	Batch ID: **R41199**	TestNo: **SM 2540 D**	FileID: **47**	Analysis Date: **8/11/2008**	SeqNo: **723937**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080811A**	Prep Date: **8/11/2008**	Units: **mg/L**
	Batch ID: **R41199**	TestNo: **SM 2540 D**	FileID: **48**	Analysis Date: **8/11/2008**	SeqNo: **723938**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	290	5.0	300	0	96.7	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16342

Sample ID: **MB-16342**	SampType: **MBLK**	TestCode: **200.8_TR**	Run ID: **ICPMS_080814A**	Prep Date: **8/12/2008**	Units: **mg/L**
	Batch ID: **16342**	TestNo: **E200.8**	FileID: **080812A.B\022SMPL.D**	Analysis Date: **8/14/2008**	SeqNo: **725732**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	U	0.00200									
Arsenic	U	0.00200									
Barium	U	0.0100									
Beryllium	U	0.00100									
Boron	U	0.200									
Cadmium	U	0.000500									
Calcium	U	0.400									
Chromium	U	0.00220									
Copper	U	0.0100									
Iron	U	0.200									
Lead	U	0.00100									
Magnesium	U	0.0500									
Manganese	U	0.00500									
Molybdenum	U	0.00500									
Nickel	U	0.0100									
Potassium	U	0.125									
Selenium	U	0.00200									
Silver	U	0.000200									
Sodium	U	0.500									
Strontium	U	0.0980									
Thallium	U	0.00100									
Zinc	U	0.00500									

Sample ID: **LCS-16342**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080814A**	Prep Date: **8/12/2008**	Units: **mg/L**
	Batch ID: **16342**	TestNo: **E200.8**	FileID: **080812A.B\023SMPL.D**	Analysis Date: **8/14/2008**	SeqNo: **725734**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.00986	0.00200	0.01	0	98.6	85	115	0	0		
Arsenic	0.1041	0.00200	0.1	0	104	85	115	0	0		
Barium	0.09555	0.0100	0.1	0.000395	95.6	85	115	0	0		
Beryllium	0.00961	0.00100	0.01	0	96.1	85	115	0	0		

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X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16342

Sample ID: **LCS-16342**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080814A**	Prep Date: **8/12/2008**	Units: **mg/L**
	Batch ID: **16342**	TestNo: **E200.8**	FileID: **080812A.B\023SMPL.D**	Analysis Date: **8/14/2008**	SeqNo: **725734**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron	1.02	0.200	1	0.01668	102	85	115	0	0		
Cadmium	0.01	0.000500	0.01	0	100	85	115	0	0		
Calcium	1.028	0.400	1	0	103	85	115	0	0		
Chromium	0.1038	0.00220	0.1	0.0006105	104	85	115	0	0		
Copper	0.09705	0.0100	0.1	0	97.1	85	115	0	0		
Iron	0.9395	0.200	1	0	94	85	115	0	0		
Lead	0.01972	0.00100	0.02	0	98.6	85	115	0	0		
Magnesium	0.918	0.0500	1	0	91.8	85	115	0	0		
Manganese	0.2023	0.00500	0.2	0	101	85	115	0	0		
Molybdenum	0.09975	0.00500	0.1	0	99.8	85	115	0	0		
Nickel	0.09715	0.0100	0.1	0	97.2	85	115	0	0		
Potassium	0.9225	0.125	1	0	92.3	85	115	0	0		
Selenium	0.0219	0.00200	0.02	0	110	85	115	0	0		
Silver	0.009875	0.000200	0.01	0.00004647	98.8	85	115	0	0		
Sodium	0.8945	0.500	1	0	89.5	85	115	0	0		
Strontium	0.1001	0.0980	0.1	0	100	85	115	0	0		
Thallium	0.00517	0.00100	0.005	0	103	85	115	0	0		
Zinc	0.1955	0.00500	0.2	0	97.8	85	115	0	0		

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Evergreen Analytical, Inc.

Date: *15-Aug-08*

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16298

Sample ID: **MB-16298**	SampType: **MBLK**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080808A**	Prep Date: **8/8/2008**	Units: **mg/L**
	Batch ID: **16298**	TestNo: **E245.1**	FileID: **80808**	Analysis Date: **8/8/2008**	SeqNo: **723074**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0	0.000100									

Sample ID: **LCS-16298**	SampType: **LCS**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080808A**	Prep Date: **8/8/2008**	Units: **mg/L**
	Batch ID: **16298**	TestNo: **E245.1**	FileID: **80808**	Analysis Date: **8/8/2008**	SeqNo: **723075**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.000999	0.000100	0.001	0	99.9	85	115	0	0		

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Evergreen Analytical, Inc.

Date: *13-Aug-08*

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16334**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080812A**	Prep Date: **8/12/2008**	Units: **µg/L**
	Batch ID: **16334**	TestNo: **E504.1**	FileID: **012.D**	Analysis Date: **8/12/2008**	SeqNo: **725435**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16334**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080812A**	Prep Date: **8/12/2008**	Units: **µg/L**
	Batch ID: **16334**	TestNo: **E504.1**	FileID: **013.D**	Analysis Date: **8/12/2008**	SeqNo: **725436**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.273	0.020	0.25	0	109	70	130	0	0		
1,2-Dibromoethane	0.265	0.010	0.25	0	106	70	130	0	0		

Sample ID: **LCS-16334-2**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080812A**	Prep Date: **8/12/2008**	Units: **µg/L**
	Batch ID: **16334**	TestNo: **E504.1**	FileID: **014.D**	Analysis Date: **8/12/2008**	SeqNo: **725437**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.268	0.020	0.25	0	107	70	130	0	0		
1,2-Dibromoethane	0.261	0.010	0.25	0	104	70	130	0	0		

Sample ID: **08-5485-01CMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080812A**	Prep Date: **8/12/2008**	Units: **µg/L**
	Batch ID: **16334**	TestNo: **E504.1**	FileID: **016.D**	Analysis Date: **8/12/2008**	SeqNo: **725439**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.112	0.020	1	0	111	65	135	0	0		
1,2-Dibromoethane	1.059	0.010	1	0	106	65	135	0	0		

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Evergreen Analytical, Inc.

Date: *06-Aug-08*

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS050608

Sample ID: **GB080608**	SampType: **MBLK**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080604**	Analysis Date: **8/6/08**	SeqNo: **722176**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS080608**	SampType: **LCS**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080605**	Analysis Date: **8/6/08**	SeqNo: **722177**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.163	0.016	0.9548	0	122	70	130	0	0		
Ethene	1.293	0.024	0.8913	0	145	70	140	0	0		S
Methane	0.5958	0.0080	0.5094	0	117	70	130	0	0		

Sample ID: **LCSD080608**	SampType: **LCSD**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080606**	Analysis Date: **8/6/08**	SeqNo: **722178**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.209	0.016	0.9548	0	127	70	130	1.163	3.83	30	
Ethene	1.298	0.024	0.8913	0	146	70	140	1.293	0.380	30	S
Methane	0.5936	0.0080	0.5094	0	117	70	130	0.5958	0.372	30	

Sample ID: **08-5612-01GMS**	SampType: **MS**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080617**	Analysis Date: **8/6/08**	SeqNo: **722172**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.139	0.016	0.9548	0	119	70	130	0	0		
Ethene	1.24	0.024	0.8913	0	139	70	140	0	0		
Methane	0.5933	0.0080	0.5094	0.01089	114	70	130	0	0		

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Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS050608

Sample ID: **08-5612-01GMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080806A**	Prep Date: **8/6/08**	Units: **mg/L**
	Batch ID: **GAS050608**	TestNo: **RSKSOP175**	FileID: **GAS080618**	Analysis Date: **8/6/08**	SeqNo: **722173**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.187	0.016	0.9548	0	124	70	130	1.139	4.07	30	
Ethene	1.303	0.024	0.8913	0	146	70	140	1.24	4.97	30	S
Methane	0.6073	0.0080	0.5094	0.01089	117	70	130	0.5933	2.33	30	

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Evergreen Analytical, Inc.

Date: *11-Aug-08*

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB4080708a**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\0501005.D**	Analysis Date: **8/7/2008**	SeqNo: **724059**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

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Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB4080708a**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\0501005.D**	Analysis Date: **8/7/2008**	SeqNo: **724059**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

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X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB4080708a**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\0501005.D**	Analysis Date: **8/7/2008**	SeqNo: **724059**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	4.98	0	5	0	99.6	70	130	0	0		
Surr: 4-Bromofluorobenzene	4.88	0	5	0	97.6	70	130	0	0		

Sample ID: **LCS4080708a**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\0601006.D**	Analysis Date: **8/7/2008**	SeqNo: **724060**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.8	0.50	5	0	96	70	130	0	0		
Bromobenzene	5.06	0.50	5	0	101	70	130	0	0		
Bromochloromethane	5.02	0.50	5	0	100	70	130	0	0		
Bromodichloromethane	5.2	0.50	5	0	104	70	130	0	0		
Bromoform	5	0.50	5	0	100	70	130	0	0		
Bromomethane	4.95	0.50	5	0	99	70	130	0	0		
n-Butylbenzene	5.14	0.50	5	0	103	70	130	0	0		
sec-Butylbenzene	4.95	0.50	5	0	99	70	130	0	0		
t-Butylbenzene	4.95	0.50	5	0	99	70	130	0	0		
Carbon tetrachloride	5.15	0.50	5	0	103	70	130	0	0		
Chlorobenzene	4.9	0.50	5	0	98	70	130	0	0		
Chloroethane	4.67	0.50	5	0	93.4	70	130	0	0		
Chloroform	4.79	0.50	5	0	95.8	70	130	0	0		
Chloromethane	4.75	0.50	5	0	95	70	130	0	0		
2-Chlorotoluene	5.01	0.50	5	0	100	70	130	0	0		
4-Chlorotoluene	4.97	0.50	5	0	99.4	70	130	0	0		
Dibromochloromethane	5.12	0.50	5	0	102	70	130	0	0		
Dibromomethane	4.88	0.50	5	0	97.6	70	130	0	0		
1,2-Dichlorobenzene	4.86	0.50	5	0	97.2	70	130	0	0		
1,3-Dichlorobenzene	4.92	0.50	5	0	98.4	70	130	0	0		
1,4-Dichlorobenzene	4.88	0.50	5	0	97.6	70	130	0	0		
Dichlorodifluoromethane	6.51	0.50	5	0	130	70	130	0	0		
1,1-Dichloroethane	4.71	0.50	5	0	94.2	70	130	0	0		
1,2-Dichloroethane	4.8	0.50	5	0	96	70	130	0	0		

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H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS4080708a**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\0601006.D**	Analysis Date: **8/7/2008**	SeqNo: **724060**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	4.76	0.50	5	0	95.2	70	130	0	0		
cis-1,2-Dichloroethene	4.8	0.50	5	0	96	70	130	0	0		
trans-1,2-Dichloroethene	4.82	0.50	5	0	96.4	70	130	0	0		
1,2-Dichloropropane	4.86	0.50	5	0	97.2	70	130	0	0		
1,3-Dichloropropane	4.92	0.50	5	0	98.4	70	130	0	0		
2,2-Dichloropropane	4.92	0.50	5	0	98.4	70	130	0	0		
1,1-Dichloropropene	4.75	0.50	5	0	95	70	130	0	0		
cis-1,3-Dichloropropene	4.99	0.50	5	0	99.8	70	130	0	0		
trans-1,3-Dichloropropene	4.64	0.50	5	0	92.8	70	130	0	0		
Ethylbenzene	5.02	0.50	5	0	100	70	130	0	0		
Hexachlorobutadiene	4.97	0.50	5	0	99.4	70	130	0	0		
Isopropylbenzene	4.36	0.50	5	0	87.2	70	130	0	0		
p-Isopropyltoluene	4.9	0.50	5	0	98	70	130	0	0		
Methylene chloride	5.34	0.50	5	0	107	70	130	0	0		
Naphthalene	4.73	0.50	5	0	94.6	70	130	0	0		
n-Propylbenzene	4.97	0.50	5	0	99.4	70	130	0	0		
Styrene	5.26	0.50	5	0	105	70	130	0	0		
1,1,1,2-Tetrachloroethane	5.16	0.50	5	0	103	70	130	0	0		
1,1,2,2-Tetrachloroethane	4.85	0.50	5	0	97	70	130	0	0		
Tetrachloroethene	5.04	0.50	5	0	101	70	130	0	0		
Toluene	4.82	0.50	5	0	96.4	70	130	0	0		
1,2,3-Trichlorobenzene	5.01	0.50	5	0	100	70	130	0	0		
1,2,4-Trichlorobenzene	5.11	0.50	5	0	102	70	130	0	0		
1,1,1-Trichloroethane	4.87	0.50	5	0	97.4	70	130	0	0		
1,1,2-Trichloroethane	5.01	0.50	5	0	100	70	130	0	0		
Trichloroethene	4.85	0.50	5	0	97	70	130	0	0		
Trichlorofluoromethane	4.67	0.50	5	0	93.4	70	130	0	0		
1,2,3-Trichloropropane	4.84	0.50	5	0	96.8	70	130	0	0		
1,2,4-Trimethylbenzene	5.2	0.50	5	0	104	70	130	0	0		
1,3,5-Trimethylbenzene	5.02	0.50	5	0	100	70	130	0	0		
Vinyl chloride	5.64	0.50	5	0	113	70	130	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS4080708a**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\0601006.D**	Analysis Date: **8/7/2008**	SeqNo: **724060**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	9.72	0.50	10	0	97.2	70	130	0	0		
o-Xylene	4.74	0.50	5	0	94.8	70	130	0	0		
1,3-Dichloropropene	9.63	0.50	10	0	96.3	70	130	0	0		
Xylenes, Total	14.46	0.50	15	0	96.4	70	130	0	0		
Total THM (Summation of above)	20.11	0.50	20	0	101	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	5.13	0	5	0	103	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.16	0	5	0	103	70	130	0	0		

Sample ID: **LCSD4080708a**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\2101021.D**	Analysis Date: **8/7/2008**	SeqNo: **724075**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	4.91	0.50	5	0	98.2	70	130	4.8	2.27	30	
Bromobenzene	5.14	0.50	5	0	103	70	130	5.06	1.57	30	
Bromochloromethane	5.02	0.50	5	0	100	70	130	5.02	0	30	
Bromodichloromethane	5.21	0.50	5	0	104	70	130	5.2	0.192	30	
Bromoform	4.71	0.50	5	0	94.2	70	130	5	5.97	30	
Bromomethane	4.58	0.50	5	0	91.6	70	130	4.95	7.76	30	
n-Butylbenzene	5.29	0.50	5	0	106	70	130	5.14	2.88	30	
sec-Butylbenzene	5.13	0.50	5	0	103	70	130	4.95	3.57	30	
t-Butylbenzene	5.15	0.50	5	0	103	70	130	4.95	3.96	30	
Carbon tetrachloride	5.15	0.50	5	0	103	70	130	5.15	0	30	
Chlorobenzene	4.93	0.50	5	0	98.6	70	130	4.9	0.610	30	
Chloroethane	4.86	0.50	5	0	97.2	70	130	4.67	3.99	30	
Chloroform	4.96	0.50	5	0	99.2	70	130	4.79	3.49	30	
Chloromethane	4.83	0.50	5	0	96.6	70	130	4.75	1.67	30	
2-Chlorotoluene	5.15	0.50	5	0	103	70	130	5.01	2.76	30	
4-Chlorotoluene	4.98	0.50	5	0	99.6	70	130	4.97	0.201	30	
Dibromochloromethane	4.96	0.50	5	0	99.2	70	130	5.12	3.17	30	
Dibromomethane	4.92	0.50	5	0	98.4	70	130	4.88	0.816	30	
1,2-Dichlorobenzene	4.93	0.50	5	0	98.6	70	130	4.86	1.43	30	

Qualifiers:

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCSD4080708a**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\2101021.D**	Analysis Date: **8/7/2008**	SeqNo: **724075**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	4.97	0.50	5	0	99.4	70	130	4.92	1.01	30	
1,4-Dichlorobenzene	4.91	0.50	5	0	98.2	70	130	4.88	0.613	30	
Dichlorodifluoromethane	6.71	0.50	5	0	134	70	130	6.51	3.03	30	S
1,1-Dichloroethane	4.72	0.50	5	0	94.4	70	130	4.71	0.212	30	
1,2-Dichloroethane	4.72	0.50	5	0	94.4	70	130	4.8	1.68	30	
1,1-Dichloroethene	5.02	0.50	5	0	100	70	130	4.76	5.32	30	
cis-1,2-Dichloroethene	4.96	0.50	5	0	99.2	70	130	4.8	3.28	30	
trans-1,2-Dichloroethene	5	0.50	5	0	100	70	130	4.82	3.67	30	
1,2-Dichloropropane	4.93	0.50	5	0	98.6	70	130	4.86	1.43	30	
1,3-Dichloropropane	4.92	0.50	5	0	98.4	70	130	4.92	0	30	
2,2-Dichloropropane	4.57	0.50	5	0	91.4	70	130	4.92	7.38	30	
1,1-Dichloropropene	4.91	0.50	5	0	98.2	70	130	4.75	3.31	30	
cis-1,3-Dichloropropene	4.79	0.50	5	0	95.8	70	130	4.99	4.09	30	
trans-1,3-Dichloropropene	4.3	0.50	5	0	86	70	130	4.64	7.61	30	
Ethylbenzene	5.15	0.50	5	0	103	70	130	5.02	2.56	30	
Hexachlorobutadiene	5.07	0.50	5	0	101	70	130	4.97	1.99	30	
Isopropylbenzene	4.54	0.50	5	0	90.8	70	130	4.36	4.04	30	
p-Isopropyltoluene	5.05	0.50	5	0	101	70	130	4.9	3.02	30	
Methylene chloride	5.57	0.50	5	0	111	70	130	5.34	4.22	30	
Naphthalene	4.8	0.50	5	0	96	70	130	4.73	1.47	30	
n-Propylbenzene	5.1	0.50	5	0	102	70	130	4.97	2.58	30	
Styrene	5.34	0.50	5	0	107	70	130	5.26	1.51	30	
1,1,1,2-Tetrachloroethane	5.08	0.50	5	0	102	70	130	5.16	1.56	30	
1,1,2,2-Tetrachloroethane	4.9	0.50	5	0	98	70	130	4.85	1.03	30	
Tetrachloroethene	5.14	0.50	5	0	103	70	130	5.04	1.96	30	
Toluene	5	0.50	5	0	100	70	130	4.82	3.67	30	
1,2,3-Trichlorobenzene	4.96	0.50	5	0	99.2	70	130	5.01	1.00	30	
1,2,4-Trichlorobenzene	5.07	0.50	5	0	101	70	130	5.11	0.786	30	
1,1,1-Trichloroethane	4.93	0.50	5	0	98.6	70	130	4.87	1.22	30	
1,1,2-Trichloroethane	5.1	0.50	5	0	102	70	130	5.01	1.78	30	
Trichloroethene	5.07	0.50	5	0	101	70	130	4.85	4.44	30	

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-5626
Client Project ID: Petroglyph Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCSD4080708a**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-4_080807A**	Prep Date: **8/7/2008**	Units: **µg/L**
	Batch ID: **R41205**	TestNo: **E524.2**	FileID: **\VOA40807\2101021.D**	Analysis Date: **8/7/2008**	SeqNo: **724075**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	4.97	0.50	5	0	99.4	70	130	4.67	6.22	30	
1,2,3-Trichloropropane	5	0.50	5	0	100	70	130	4.84	3.25	30	
1,2,4-Trimethylbenzene	5.28	0.50	5	0	106	70	130	5.2	1.53	30	
1,3,5-Trimethylbenzene	5.12	0.50	5	0	102	70	130	5.02	1.97	30	
Vinyl chloride	5.81	0.50	5	0	116	70	130	5.64	2.97	30	
m,p-Xylene	10	0.50	10	0	100	70	130	9.72	2.84	30	
o-Xylene	4.82	0.50	5	0	96.4	70	130	4.74	1.67	30	
1,3-Dichloropropene	9.09	0.50	10	0	90.9	70	130	9.63	5.77	30	
Xylenes, Total	14.82	0.50	15	0	98.8	70	130	14.46	2.46	30	
Total THM (Summation of above)	19.84	0.50	20	0	99.2	70	130	20.11	1.35	30	
Surr: 1,2-Dichlorobenzene-d4	5.15	0	5	0	103	70	130	0	0	0	
Surr: 4-Bromofluorobenzene	5.18	0	5	0	104	70	130	0	0	0	

Qualifiers:

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J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical Laboratory

September 03, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-5626
Client Project ID: Petroglyph Wells

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

001

WORK ORDER Summary Evergreen Analytical, Inc. 08-4787

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

7/31/2008 10:31:02 AM

Client Project ID: Petroglyph CBM Wells

QC Level: LEVEL I+

Comments: PDF + EDD in Pinery

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-4787-01A	Recl PT	Groundwater	7/08/08 1545	7/09/08	ANIONS_NonDW * ^	300.0: Anions by IC	☐	☐	7/23/08	7/10/08
08-4787-01B	Recl PT	Groundwater	7/08/08 1545	7/09/08	F_W	Fluoride	☐	☐	7/23/08	8/05/08
08-4787-01C	Recl PT	Groundwater	7/08/08 1545	7/09/08	200.7_DW * ^	200.7: Drinking Water	☐	☐	7/23/08	1/04/09
08-4787-01C	Recl PT	Groundwater	7/08/08 1545	7/09/08	200.8_TR *	200.8: Total Metals	☐	☐	7/23/08	1/04/09
08-4787-01C	Recl PT	Groundwater	7/08/08 1545	7/09/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	7/23/08	8/05/08
08-4787-01D	Recl PT	Groundwater	7/08/08 1545	7/09/08	ALK_WGRP *	Alkalinity	☐	☐	7/23/08	7/22/08
08-4787-01E	Recl PT	Groundwater	7/08/08 1545	7/09/08	504 *	504: Standard List	☐	☐	7/23/08	7/22/08
08-4787-01F	Recl PT	Groundwater	7/08/08 1545	7/09/08	524 *	524.2: Standard List	☐	☐	7/23/08	7/22/08
08-4787-01F	Recl PT	Groundwater	7/08/08 1545	7/09/08	VOATICS	VOA TICS (Largest 10)	☐	☐	7/23/08	7/22/08
08-4787-01G	Recl PT	Groundwater	7/08/08 1545	7/09/08	MEEP_W *	RSK175M: MEE	☐	☐	7/23/08	7/22/08
08-4787-01H	Recl PT	Groundwater	7/08/08 1545	7/09/08	SULF_W	Total Sulfide	☐	☐	7/23/08	7/15/08
08-4787-01I	Recl PT	Groundwater	7/08/08 1545	7/09/08	PH_W	Discharge Water pH	☐	☐	7/23/08	7/08/08
08-4787-01I	Recl PT	Groundwater	7/08/08 1545	7/09/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	7/23/08	7/15/08
08-4787-01I	Recl PT	Groundwater	7/08/08 1545	7/09/08	TSS	Total Suspended Solids (TSS)	☐	☐	7/23/08	7/15/08
08-4787-01J	Recl PT	Groundwater	7/08/08 1545	7/09/08	RAD226/228	Radium 226/228	☐	☐	7/23/08	1/04/09
08-4787-01K	Recl PT	Groundwater	7/08/08 1545	7/09/08	ALBETA	Gross Alpha-Beta	☐	☐	7/23/08	1/04/09
08-4787-01K	Recl PT	Groundwater	7/08/08 1545	7/09/08	TS_SUB	Total Solids for Gross A B	☐	☐	7/23/08	7/15/08
08-4787-01L	Recl PT	Groundwater	7/08/08 1545	7/09/08	CN_TW	Total Cyanide	☐	☐	7/23/08	7/22/08

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Evergreen Analytical Laboratory Inc.

Page ___ of ___

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719 742 5570 Fax # 719 742 5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☑ PDF ☑ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719 742 5570 Fax # 719 742 5571
Project ID# Petroglyph CBM Wells
P.O. ___ Quote ___
Sampler Steve Petersen

NOTE: *Identify Known Hazards Below*

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.

SAMPLE IDENTIFICATION	DATE SAMPLED	TIME	No. of Containers	MATRIX: 1) Drinking Water or 2) Ground Water (circle one)	MATRIX: Discharge Water	MATRIX: Soil / Solid / Air / Gas	MATRIX: Oil / Sludge / Wipe	A 300.0 Anions by IC	B Fluoride	C 200.8 11 regulated	D Alkalinity	E 504.1 EDB/DBCP	F 524.2 VOATICS	G RSKSOP-175M	H Total Sulfide	I TSS, TDS, pH	J Radium 226/228	K Gross Alpha - Beta	L Total Cyanide
Rec'd PT	7-8-08	15:45						1	1	1	1	1	3	3	1	1	4	1	1
										1		2							
	15:45																		

← # of Bottles ol

metals pkg 2 on pl 7/12

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

Sample Fraction

Instructions:

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

For Laboratory Use Only
W.O. # 08-4787
B.O.F. # 23779
C/S (O) 1302 1WS
C/S (I) 1302 UPS
Temp. °C 11.4 / Ice ___
Seals Present Y / N / NA
Samples Pres. Y / N / NA
Headspace Y / N / NA
By ___

Relinquished by: (*Signature*)	Date/Time	Received by: (*Signature*)	Date/Time	Relinquished by: (*Signature*)	Date/Time	Received by: (*Signature*)	Date/Time
	7-8-08 17:00						7/9/8 1030A

Evergreen Analytical, Inc. **Date:** *07-Aug-08*

Lab Order: 08-4787
Client Project ID Petroglyph CBM Wells

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 11.4 °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 received with no headspace present. NJO

QUALITY ASSURANCE (QA)

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

CLIENT SERVICES

The metal, anion, and alkalinity analytes were selected per the quotation. EKH

GENERAL CHEMISTRY

The flagged Fluoride result only applies to drinking waters that exceed the MCL of 4.0 mg/L.
The pH was done past holding time for a discharge water (H), but within holding time for a ground water.
There are no other anomalies to report. MM/CMS

METALS ANALYSIS

The laboratory control spike (LCS) recovery for selenium is above the QC limit. Since the bias is high and the sample is non-detect for selenium, no further action is required. There are no other anomalies to report. WKH

GAS CHROMATOGRAPHY

Method 504.1: There are no anomalies to report. AE

Method RSK175M: The laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) recovery for Ethene is 2% above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS/CMS

Evergreen Analytical, Inc.

Date: *07-Aug-08*

Lab Order: 08-4787

Client Project ID Petroglyph CBM Wells

CASE NARRATIVE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: The laboratory control spike (LCS) recovery for Dichlorodifluoromethane is above QC limits. The laboratory control spike duplicate (LCSD) recovery is within the QC limit. Since the bias is high and the sample is non-detect for that analyte, no further action is required.
The library search (TICs) detected only heavy hydrocarbons such as may be found in diesel. An 8015 TEH test could quantitate that heavier material. There are no other anomalies to report. DC/CMS

005

AUG 0 6 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 7906

WorkOrder: 08-4787

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

09-Jul-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests						
				ALPHABETA	RAD226/228 (4)	TS				
08-4787-01J	Groundwater	7/8/2008 3:45:00 PM	1LPHNO3		1					
08-4787-01K	Groundwater	7/8/2008 3:45:00 PM	1LPHNO3	1		1				

Comments:

		Date/Time		Date/Time
Relinquished by:	[signature]	7-10-08 2:23 PM	**Received by:**	Diane Tyson 7-10-08 1423
Relinquished by:			**Received by:**	

AUG 0 6 2008

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 5, 2008
HRI PROJECT	009-93
HRI SERIES NO	G240/08
DATE REC'D.	7/10/2008
CUST. P.O.#	7906

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G240/08-1

SAMPLE IDENTIFICATION: 08-4787-01J, K - sampled on 07/08/2008 @ 1545

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	2.9(+-2.3)	1.3	SM 7110 B	7/30/2008 @ 0839	AW
Gross Beta (+-Precision*), pCi/l (T)	1.1(+-2.1)	2.0	SM 7110 B	7/30/2008 @ 0839	AW
Radium-226 (+-Precision*), pCi/l (T)	0.2(+-0.8)	0.6	SM 7500-Ra B	7/30/2008 @ 1031	AN
Radium-228 (+-Precision*), pCi/l (T)	0.3(+-0.8)	0.8	EPA Ra-05	7/28/2008 @ 1149	RG
Total Solids, mg/l	352	10	EPA 160.3	7/16/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232807-A; NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: Rec1 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/8/08 1545
Date Received: 7/9/08

Lab Work Order: 08-4787
Lab Sample ID: 08-4787-01
Sample Matrix: Groundwater

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 7/10/08
Date Analyzed: 7/10/08 1102
Method Blank: METHOD BLANK
Dilution Factor: 1
Lab Fraction ID: 08-4787-01A

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	17.8	0.50	mg/L
Nitrite-N		U	0.061	mg/L
Bromide	7647-15-6	0.332	0.20	mg/L
Nitrate-N		U	0.045	mg/L

Date Prepared: 10/7/08
Date Analyzed: 7/10/08 1411
Method Blank: METHOD BLANK
Dilution Factor: 2
Lab Fraction ID: 08-4787-01A

Analytes	CAS Number	Result	LQL	Units
Sulfate	7778-80-2	88.3	1.0	mg/L

Analyst **Approved**

Qualifiers: B - Analyte detected in the associated Method Blank, value not subtracted from result
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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/14/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Rec1 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/8/08 1545
Date Received: 7/9/08

Lab Work Order 08-4787
Lab Sample ID: 08-4787-01
Sample Matrix: Groundwater

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 7/11/08
Date Analyzed: 7/11/08
Lab File ID: 10
Method Blank: MBLK 07/11/08
Dilution Factor: 1
Lab Fraction ID: 08-4787-01D

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		138	5.0	mg/L CaCO3
Bicarbonate		121	5.0	mg/L CaCO3
Carbonate		16.6	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 7/10/08
Date Analyzed: 7/10/08
Lab File ID: 58
Method Blank: MBLK 7/10/08
Dilution Factor: 1
Lab Fraction ID: 08-4787-01L

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 7/14/08
Date Analyzed: 7/14/08
Lab File ID: 9
Method Blank: MBLK 07/14/08
Dilution Factor: 1
Lab Fraction ID: 08-4787-01B

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	5.8 *	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 7/9/08
Date Analyzed: 7/9/08 1150
Dilution Factor: 1
Lab Fraction ID: 08-4787-01I

Analytes	CAS Number	Result	LQL	Units
pH		8.93 H	1.00	pH Units

Analyst

Approved

Qualifiers:
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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
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LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 7/15/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Rec1 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/8/08 1545
Date Received: 7/9/08

Lab Work Order 08-4787
Lab Sample ID: 08-4787-01
Sample Matrix: Groundwater

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 7/15/08
Date Analyzed: 7/15/08
Lab File ID: 60
Method Blank: MBLK 07/15/08
Dilution Factor: 1
Lab Fraction ID: 08-4787-01H

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 7/14/08
Date Analyzed: 7/14/08
Lab File ID: 4
Method Blank: MBLK
Dilution Factor: 1
Lab Fraction ID: 08-4787-01I

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		380	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 7/11/08
Date Analyzed: 7/11/08
Lab File ID: 4
Method Blank: MBLK 07/11/08
Dilution Factor: 1
Lab Fraction ID: 08-4787-01I

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		U	5.0	mg/L

Analyst

Approved

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Print Date: 7/15/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Rec1 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/8/08
Date Received: 7/9/08

Lab Work Order 08-4787
Lab Sample ID: 08-4787-01
Sample Matrix: Groundwater

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 7/11/08
Date Analyzed: 7/14/08
Lab File ID: 080714A.B\102SMPL.D
Method Blank: MB-16023
Dilution Factor: 1
Lab Fraction ID: 08-4787-01C

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	U	0.00200	mg/L
Barium	7440-39-3	0.0322	0.0100	mg/L
Beryllium	7440-41-7	U	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	4.57	0.400	mg/L
Chromium	7440-47-3	0.00257	0.00220	mg/L
Copper	7440-50-8	U	0.0100	mg/L
Iron	7439-89-6	0.357	0.200	mg/L
Lead	7439-92-1	U	0.00100	mg/L
Magnesium	7439-95-4	U	0.0500	mg/L
Manganese	7439-96-5	0.0182	0.00500	mg/L
Molybdenum	7439-98-7	0.00639	0.00500	mg/L
Nickel	7440-02-0	U	0.0100	mg/L
Potassium	7440-09-7	0.420	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Strontium	7440-24-6	0.109	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.0117 B	0.00500	mg/L

MB
Analyst

Approved

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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
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Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 7/23/2008

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862

(303) 425-6021

Client Sample ID: Rec1 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/8/08
Date Received: 7/9/08

Lab Work Order 08-4787
Lab Sample ID: 08-4787-01
Sample Matrix: Groundwater

NON REGULATED METALS

Method: E200.7, Rev. 4.4 **Prep Method: E200.7/SW3010A**

Date Prepared: 7/21/08
Date Analyzed: 7/21/08
Lab File ID: 072108PM
Method Blank: MB-16109
Dilution Factor: 1
Lab Fraction ID: 08-4787-01C

Analytes	CAS Number	Result	LQL	Units
Sodium	7440-23-5	110	0.40	mg/L

Analyst **Approved**

Qualifiers:
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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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Definitions:
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LQL - Lower Quantitation Limit
Surr - Surrogate

Print Date: 7/23/2008

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
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Client Sample ID: Rec1 PT
Client Project ID: Petroglyph CBM Wells
Date Collected: 7/8/08
Date Received: 7/9/08

Lab Work Order 08-4787
Lab Sample ID: 08-4787-01
Sample Matrix: Groundwater

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 7/16/08
Date Analyzed: 7/16/08
Lab File ID: 71708
Method Blank: MB-16065
Dilution Factor: 1
Lab Fraction ID: 08-4787-01C

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/23/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec1 PT	**Lab Work Order:**	08-4787
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-4787-01E
Date Collected:	7/8/2008	**Sample Matrix:**	Groundwater
Date Received:	7/9/2008	**Lab File ID:**	023.D
Date Prepared:	7/16/2008	**Method Blank:**	MB-16067
Date Analyzed:	7/16/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst

Approved

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/17/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Rec1 PT	**Lab Work Order:**	08-4787
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-4787-01F
Date Collected:	7/8/2008	**Sample Matrix:**	Groundwater
Date Received:	7/9/2008	**Lab File ID:**	1101011.D
Date Prepared:	7/14/2008	**Method Blank:**	MB6071408
Date Analyzed:	7/14/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	U	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	U	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	U	0.50

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**

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X - See case narrative
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LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 7/15/2008

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Client Sample ID:	Rec1 PT	**Lab Work Order:**	08-4787
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-4787-01F
Date Collected:	7/8/2008	**Sample Matrix:**	Groundwater
Date Received:	7/9/2008	**Lab File ID:**	1101011.D
Date Prepared:	7/14/2008	**Method Blank:**	MB6071408
Date Analyzed:	7/14/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	U		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	U		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	U		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	U		0.50
o-Xylene	95-47-6	U		0.50
Xylenes, Total	1330-20-7	U		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	105	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	100	**QC Limits:**	70-130 %REC

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
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Definitions: NA - Not Applicable
LQL - Lower Quantitation Limit
MDL - Method Detection Limit
Surr - Surrogate Standard

Print Date: 7/15/2008

Tentatively Identified Compound (LSC) summary

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

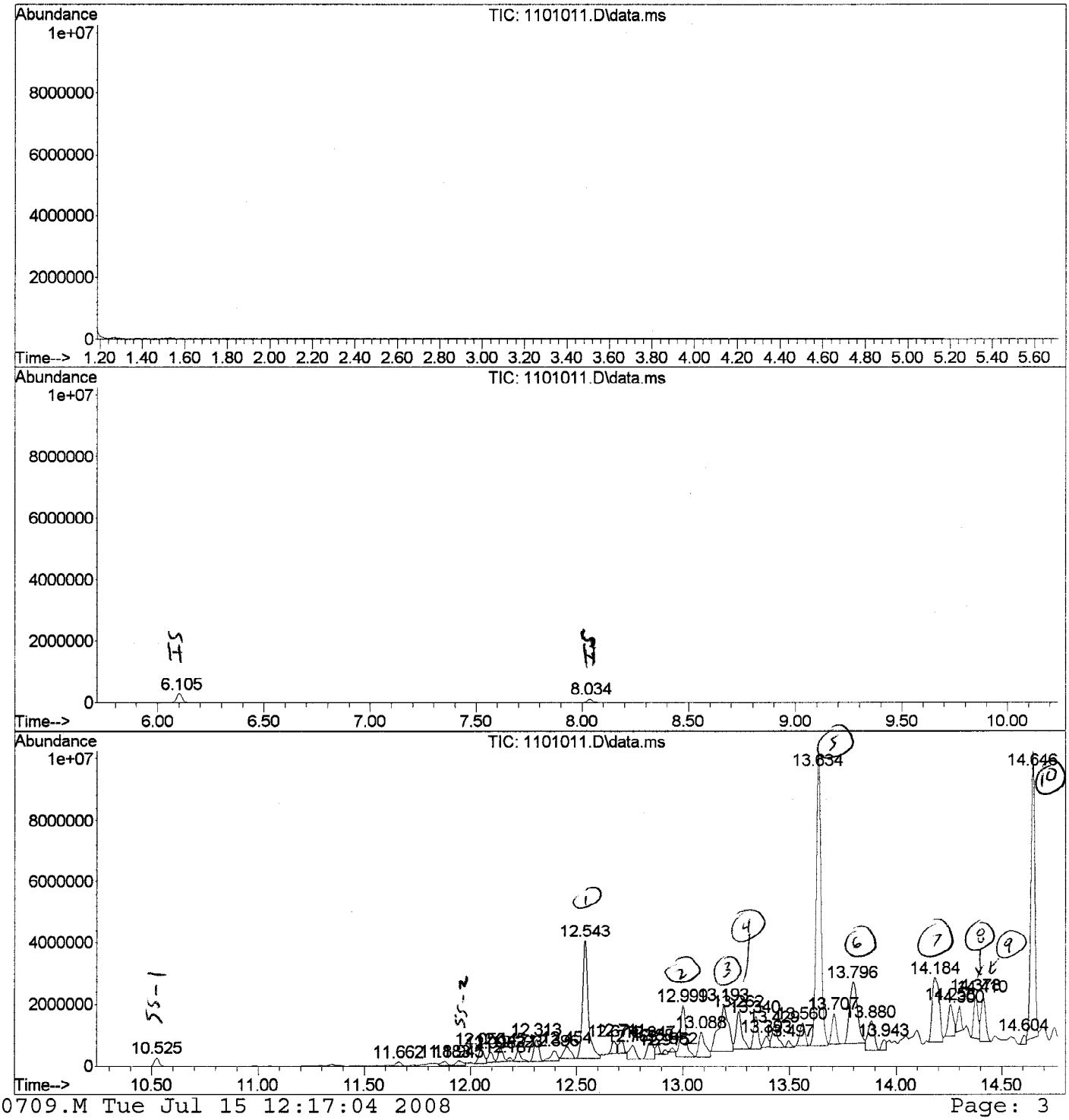
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TIC Top Hit name	RT	EstConc	Units	Response	#	RT	Resp	Conc
ndecane	12.543	66.6	ug/l	7131460	1	6.105	535342	5.0
aphthalene, de...	12.999	27.4	ug/l	2938320	1	6.105	535342	5.0
-Methyldecahyd...	13.193	45.0	ug/l	4817000	1	6.105	535342	5.0
ndecane, 2-met...	13.262	20.7	ug/l	2215040	1	6.105	535342	5.0
odecane	13.634	139.2	ug/l	14901500	1	6.105	535342	5.0
ndecane, 2,6-d...	13.796	48.3	ug/l	5170510	1	6.105	535342	5.0
-Hexacosanol	14.184	45.7	ug/l	4888390	1	6.105	535342	5.0
odecane, 3-met...	14.378	18.5	ug/l	1979980	1	6.105	535342	5.0
ridecane, 7-me...	14.410	20.4	ug/l	2181820	1	6.105	535342	5.0
ridecane	14.646	114.3	ug/l	12242300	1	6.105	535342	5.0

LSC Report - Integrated Chromatogram

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

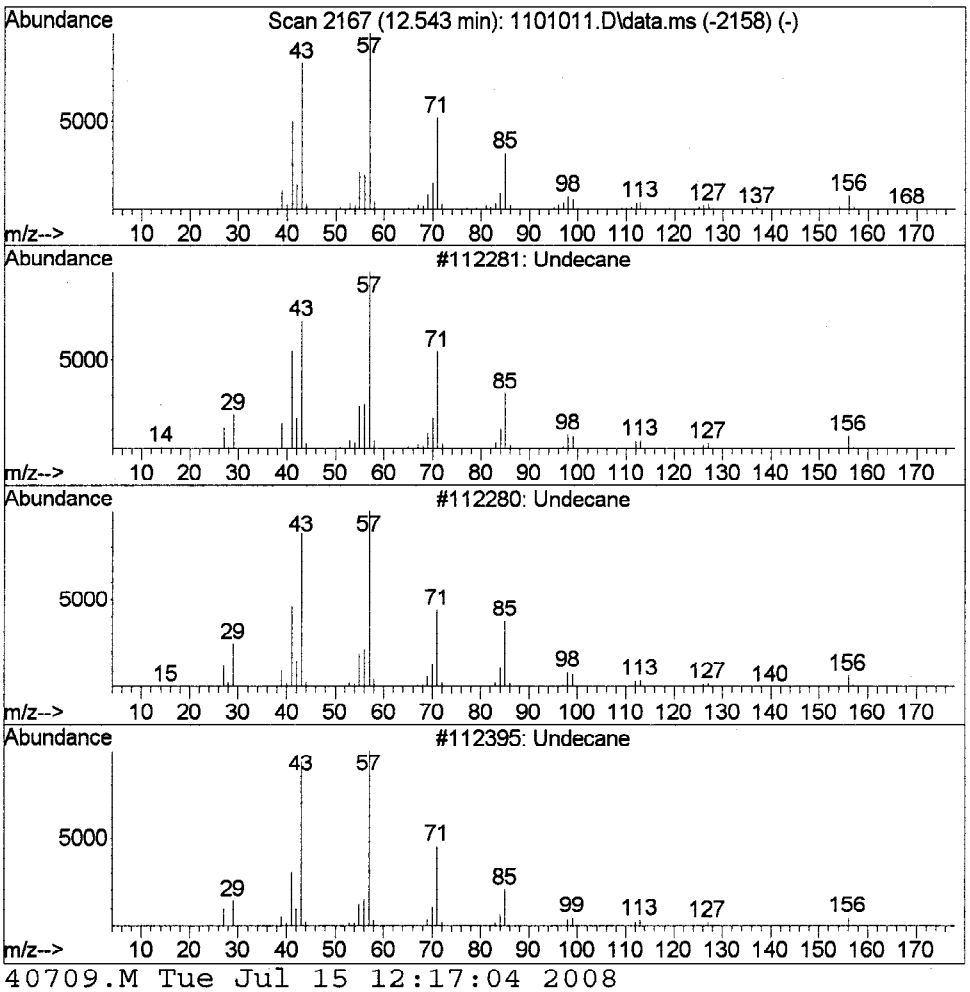
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

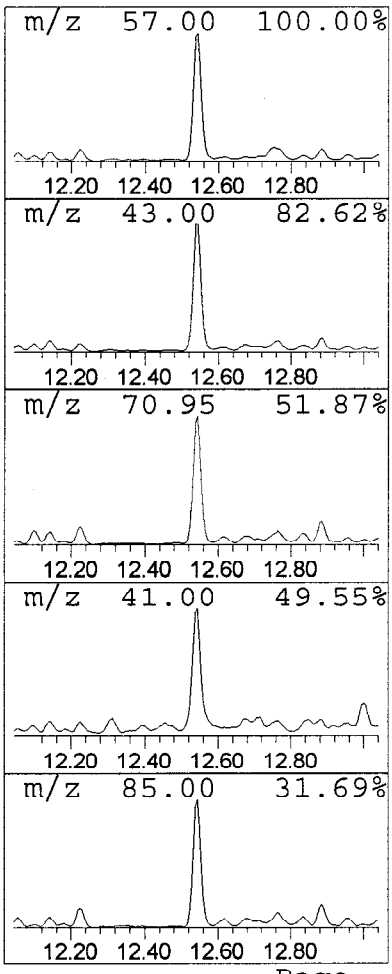
****

Peak Number 1 Undecane Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.543	66.61 ug/l	7131460	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Undecane	156	C11H24	001120-21-4	96
2	Undecane	156	C11H24	001120-21-4	96
3	Undecane	156	C11H24	001120-21-4	90
4	Tetradecane	198	C14H30	000629-59-4	90
5	Undecane	156	C11H24	001120-21-4	87





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

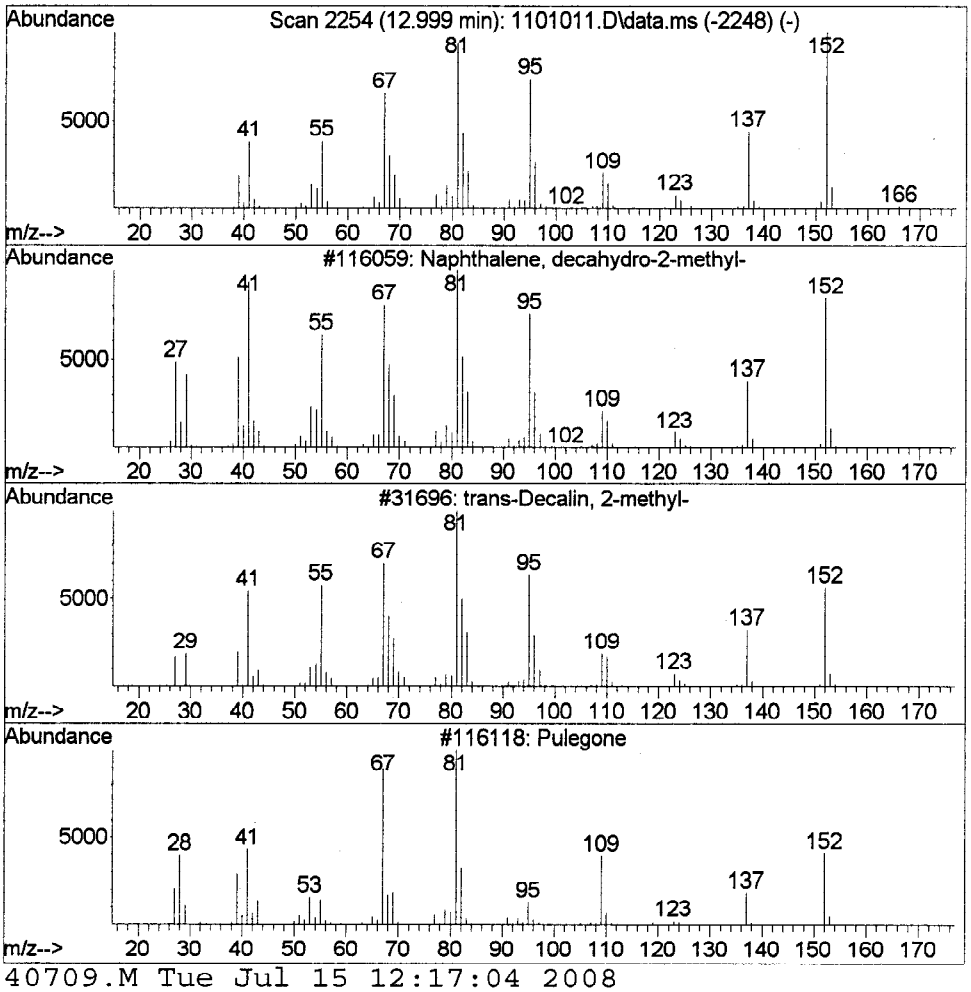
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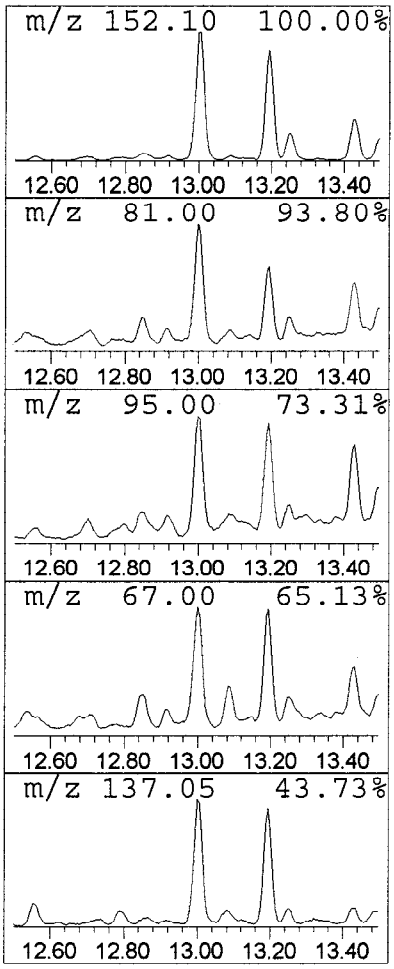
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Peak Number 2 Naphthalene, decahydro-2-me... Concentration Rank 7

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.999	27.44 ug/l	2938320	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Naphthalene, decahydro-2-methyl-	152	C11H20	002958-76-1	95
2	trans-Decalin, 2-methyl-	152	C11H20	1000152-47-3	93
3	Pulegone	152	C10H16O	000089-82-7	70
4	Cyclohexanone, 5-methyl-2-(1-met...	152	C10H16O	015932-80-6	70
5	Pulegone	152	C10H16O	000089-82-7	68





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

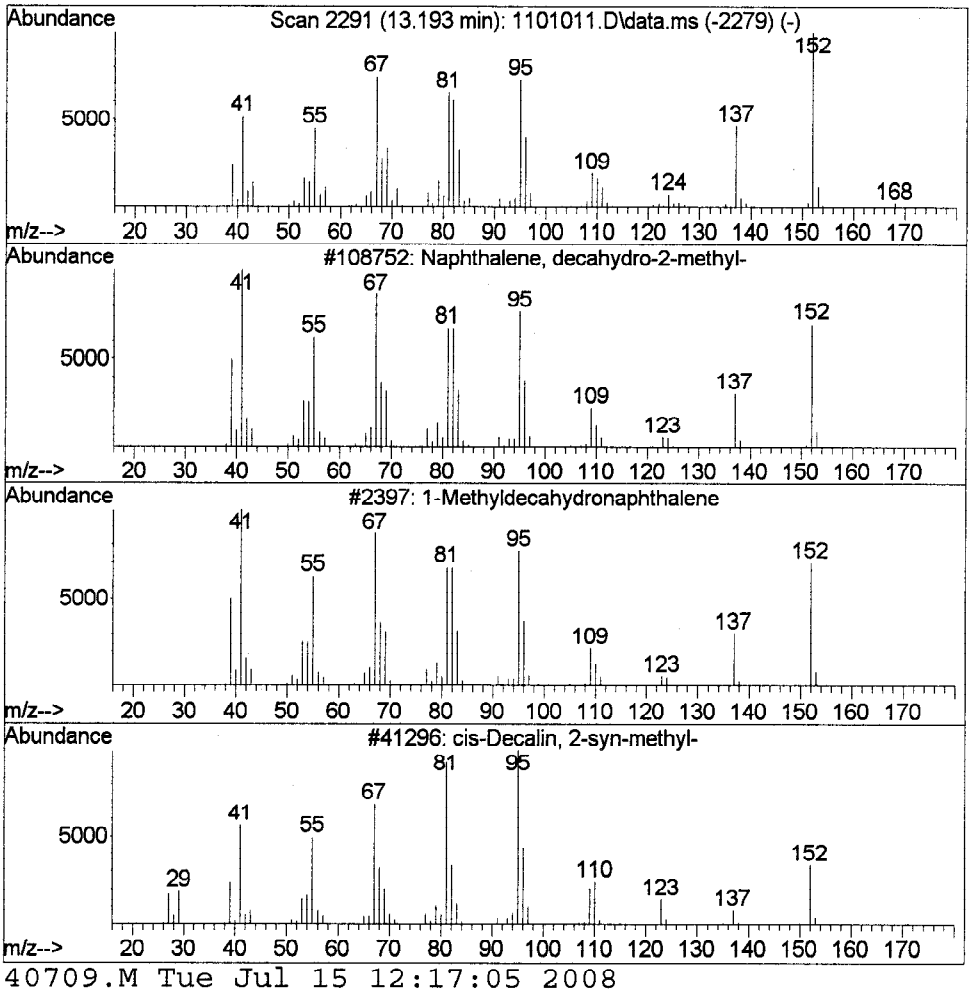
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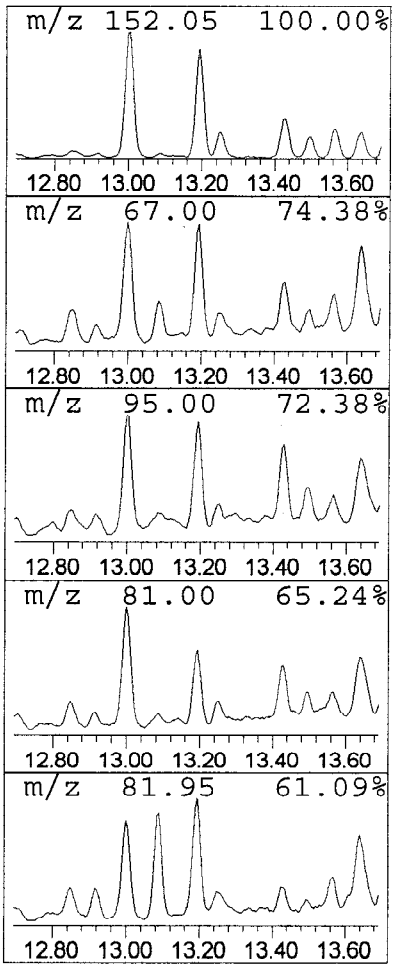
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Peak Number 3 Naphthalene, decahydro-2-me... Concentration Rank 6

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.193	44.99 ug/l	4817000	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Naphthalene, decahydro-2-methyl-	152	C11H20	002958-76-1	95
2	1-Methyldecahydronaphthalene	152	C11H20	002958-75-0	95
3	cis-Decalin, 2-syn-methyl-	152	C11H20	1000155-85-6	93
4	Pulegone	152	C10H16O	000089-82-7	81
5	Naphthalene, decahydro-2-methyl-	152	C11H20	002958-76-1	76





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

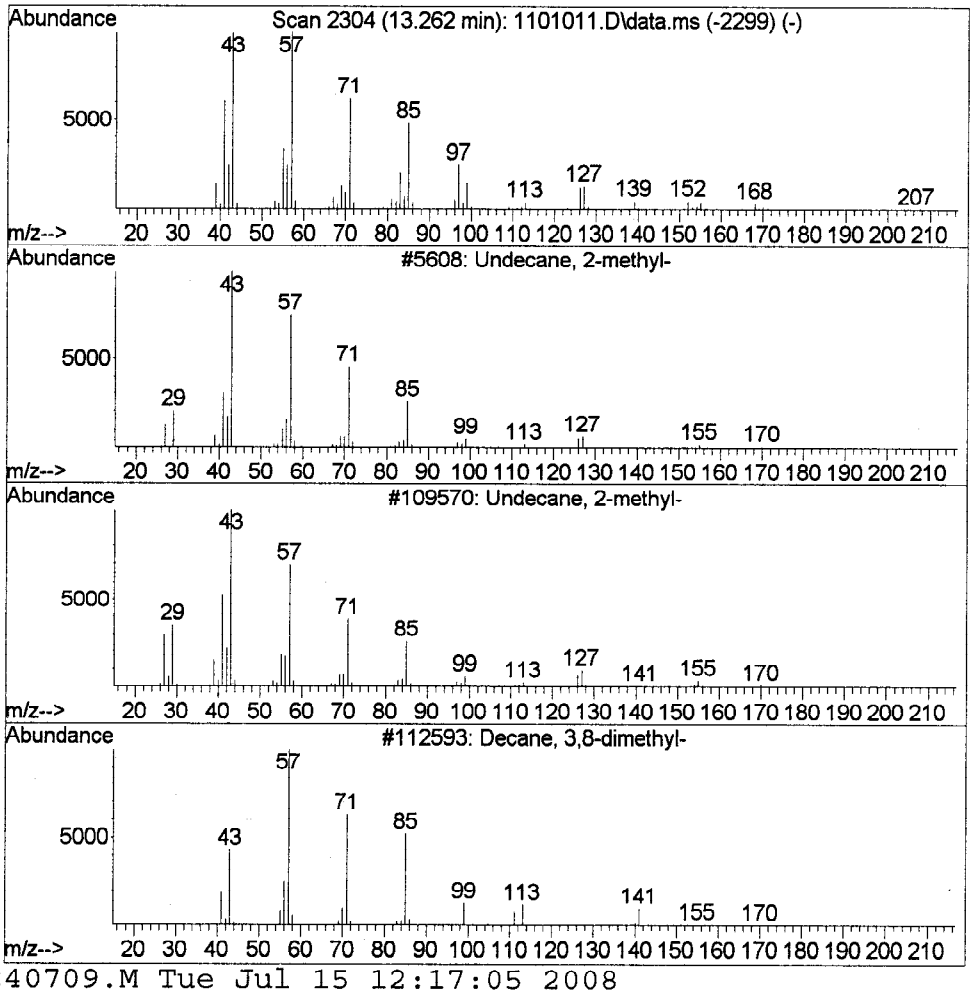
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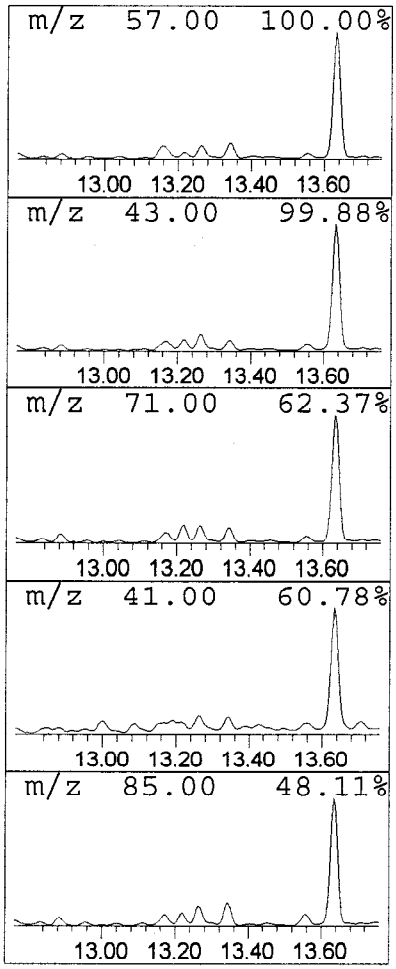
Peak Number 4 Undecane, 2-methyl- Concentration Rank 8

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.262	20.69 ug/l	2215040	Fluorobenzene (IS-1)	6.105

(4)

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Undecane, 2-methyl-	170	C12H26	007045-71-8	81
2	Undecane, 2-methyl-	170	C12H26	007045-71-8	70
3	Decane, 3,8-dimethyl-	170	C12H26	017312-55-9	53
4	Pentacosane	352	C25H52	000629-99-2	53
5	Octacosane	394	C28H58	000630-02-4	50





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

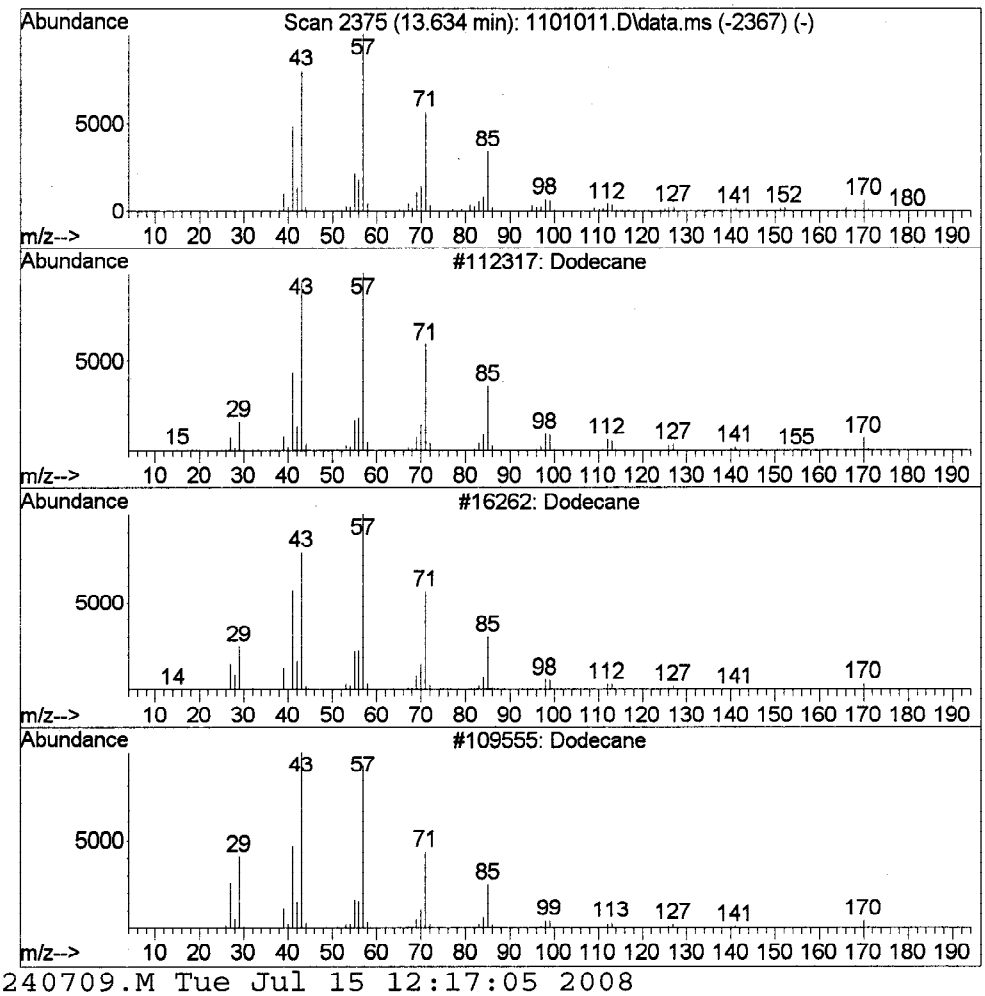
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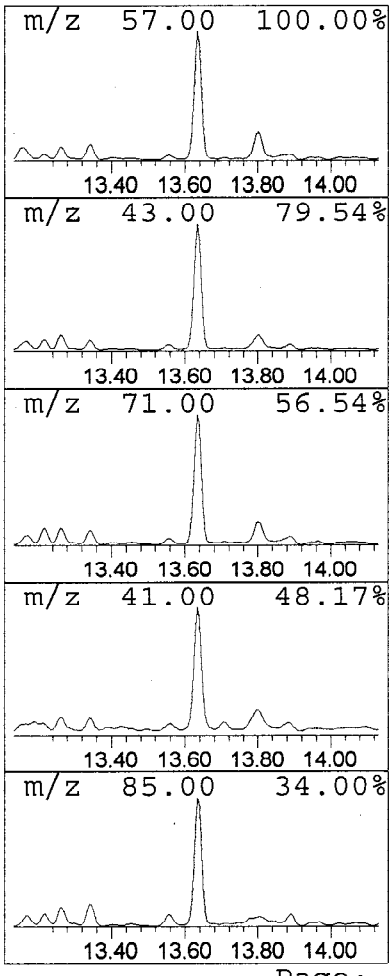
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Peak Number 5 Dodecane Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.634	139.18 ug/l	14901500	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Dodecane	170	C12H26	000112-40-3	96
2	Dodecane	170	C12H26	000112-40-3	96
3	Dodecane	170	C12H26	000112-40-3	91
4	Undecane	156	C11H24	001120-21-4	90
5	Heptadecane	240	C17H36	000629-78-7	87





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

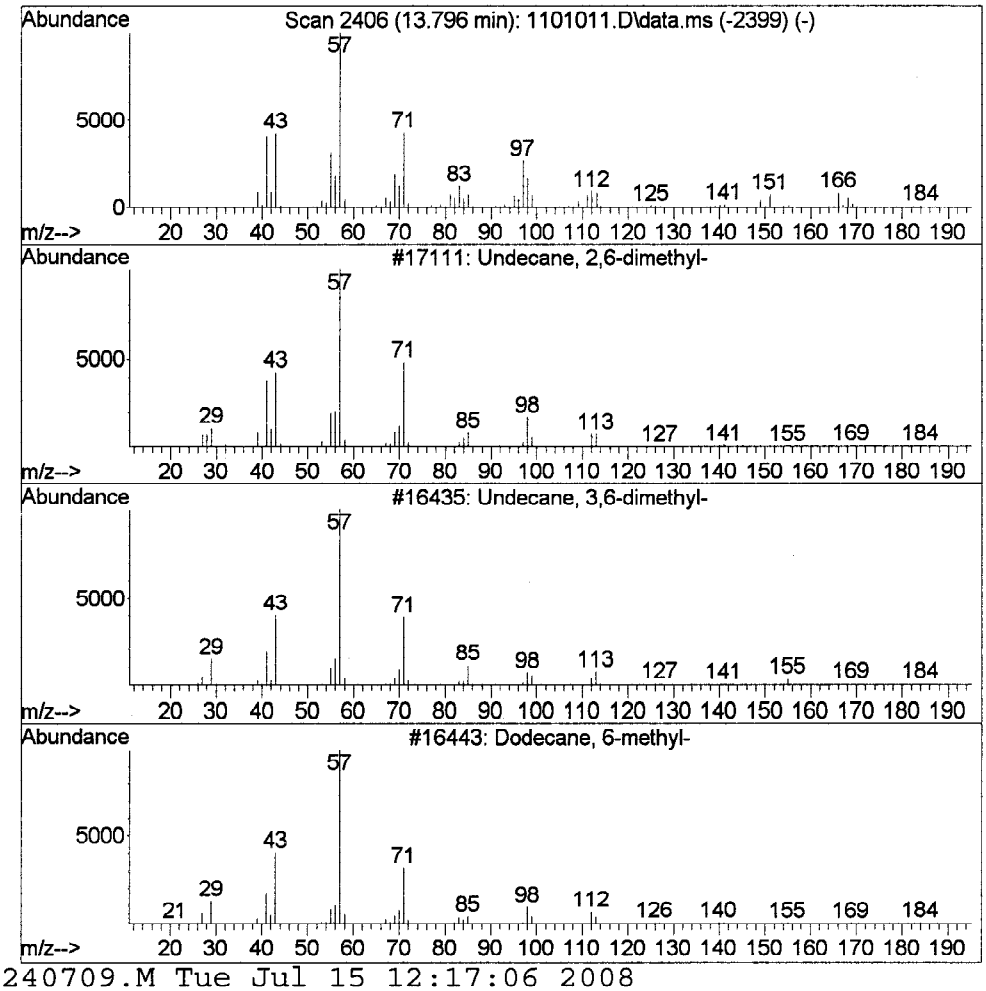
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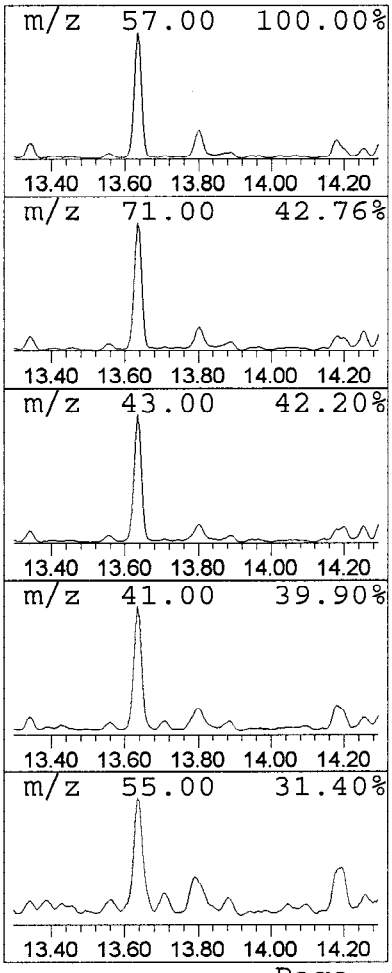
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Peak Number 6 Undecane, 2,6-dimethyl- Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.796	48.29 ug/l	5170510	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Undecane, 2,6-dimethyl-	184	C13H28	017301-23-4	96
2	Undecane, 3,6-dimethyl-	184	C13H28	017301-28-9	52
3	Dodecane, 6-methyl-	184	C13H28	006044-71-9	50
4	5-Ethyldecane	170	C12H26	017302-36-2	50
5	Dotriacontane	451	C32H66	000544-85-4	47





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

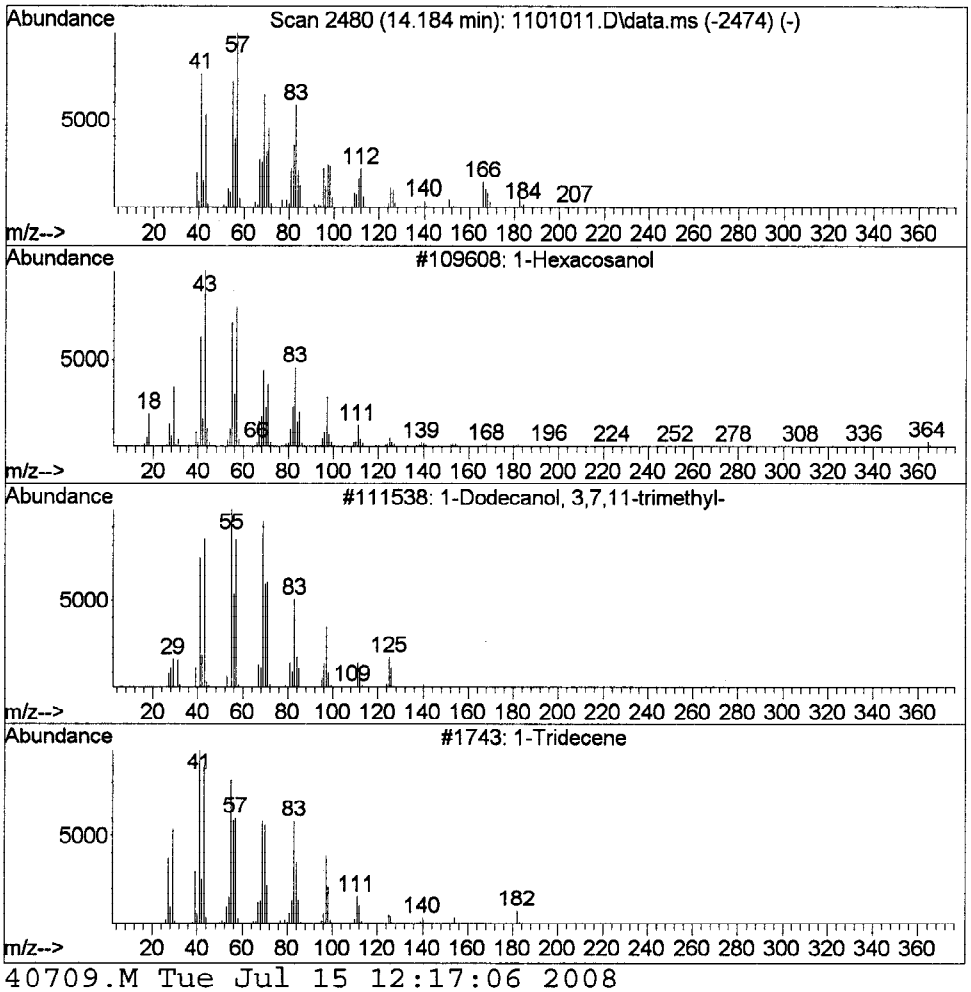
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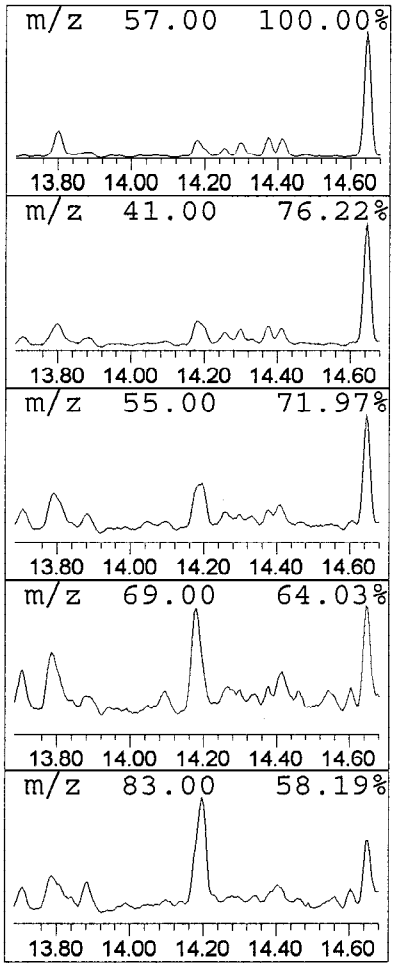
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Peak Number 7 1-Hexacosanol Concentration Rank 5

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.184	45.66 ug/l	4888390	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	1-Hexacosanol	382	C26H54O	000506-52-5	58
2	1-Dodecanol, 3,7,11-trimethyl-	228	C15H32O	006750-34-1	53
3	1-Tridecene	182	C13H26	002437-56-1	50
4	Cyclohexane, 2-butyl-1,1,3-trime...	182	C13H26	054676-39-0	49
5	Cyclododecane	168	C12H24	000294-62-2	46





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

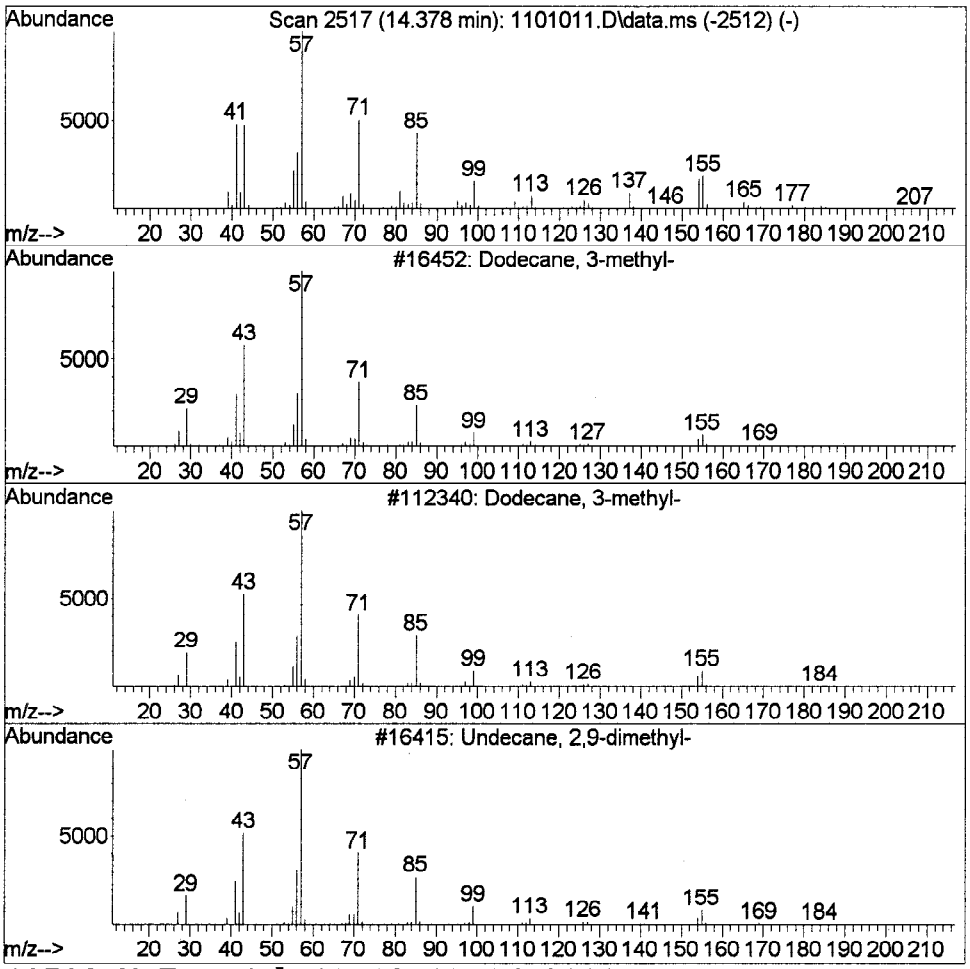
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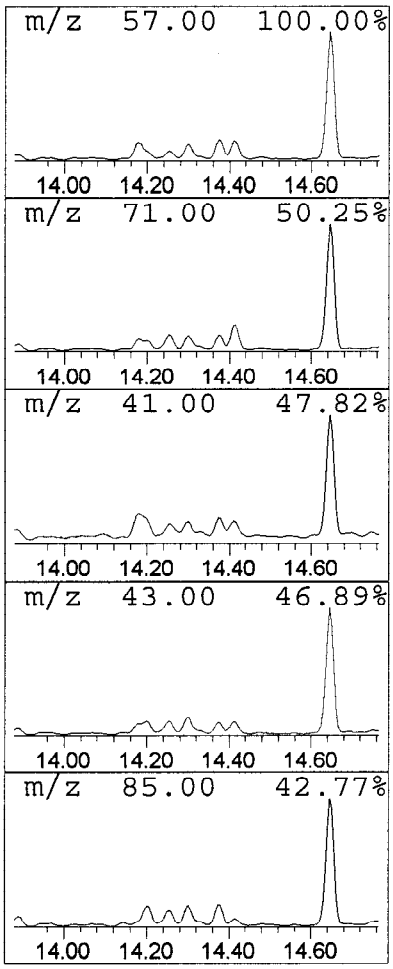
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Peak Number 8 Dodecane, 3-methyl- Concentration Rank 10

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.378	18.49 ug/l	1979980	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Dodecane, 3-methyl-	184	C13H28	017312-57-1	83
2	Dodecane, 3-methyl-	184	C13H28	017312-57-1	83
3	Undecane, 2,9-dimethyl-	184	C13H28	017301-26-7	78
4	1-Iodoundecane	282	C11H23I	004282-44-4	64
5	Undecane, 3-ethyl-	184	C13H28	017312-58-2	59





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

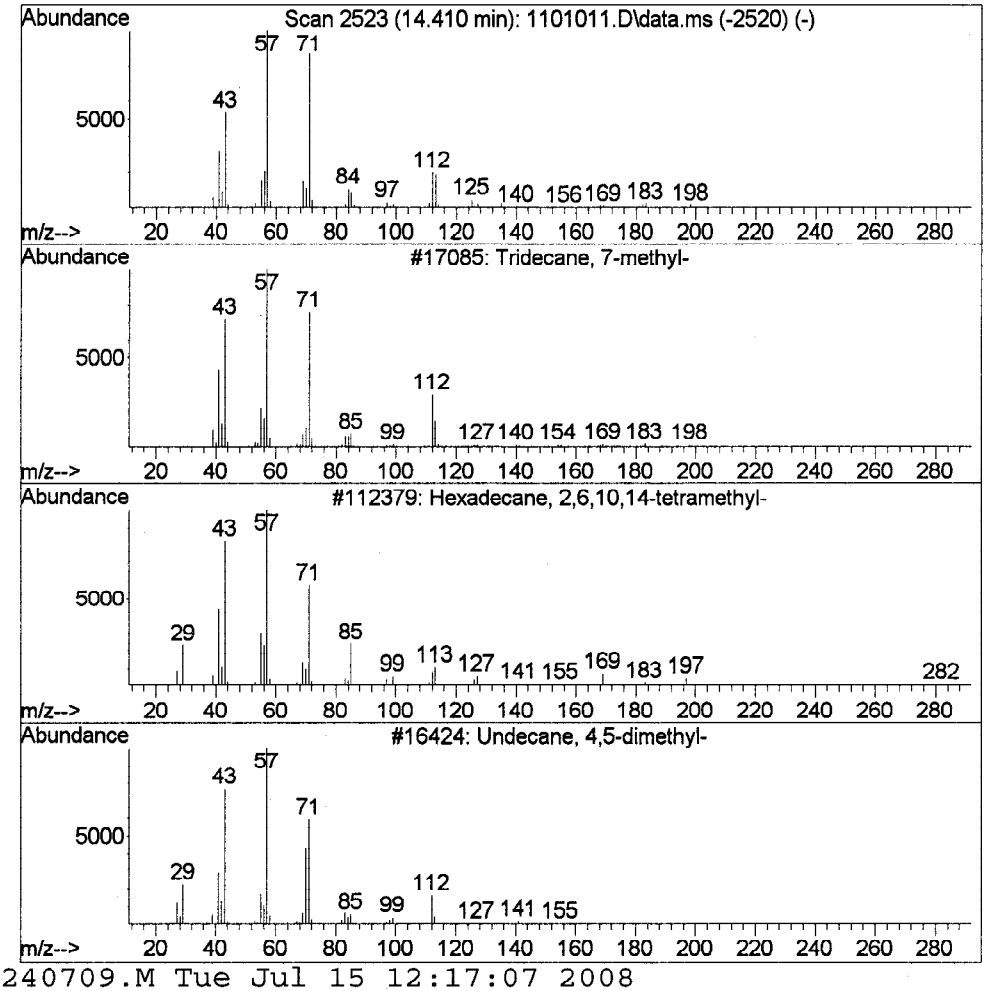
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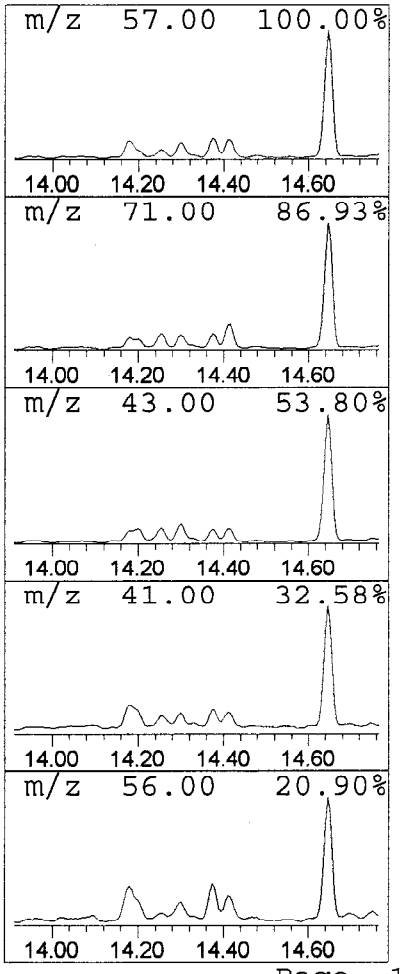
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Peak Number 9 Tridecane, 7-methyl- Concentration Rank 9

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.410	20.38 ug/l	2181820	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Tridecane, 7-methyl-	198	C14H30	026730-14-3	91
2	Hexadecane, 2,6,10,14-tetramethyl-	282	C20H42	000638-36-8	64
3	Undecane, 4,5-dimethyl-	184	C13H28	017312-79-7	64
4	Nonane, 3-methyl-	142	C10H22	005911-04-6	64
5	Undecane, 6-ethyl-	184	C13H28	017312-60-6	64





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1101011.D
Acq On : 14 Jul 2008 4:21 pm
Operator : Don Chamot
Sample : 08-4787-01F
Misc : SAMP 524
ALS Vial : 11 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

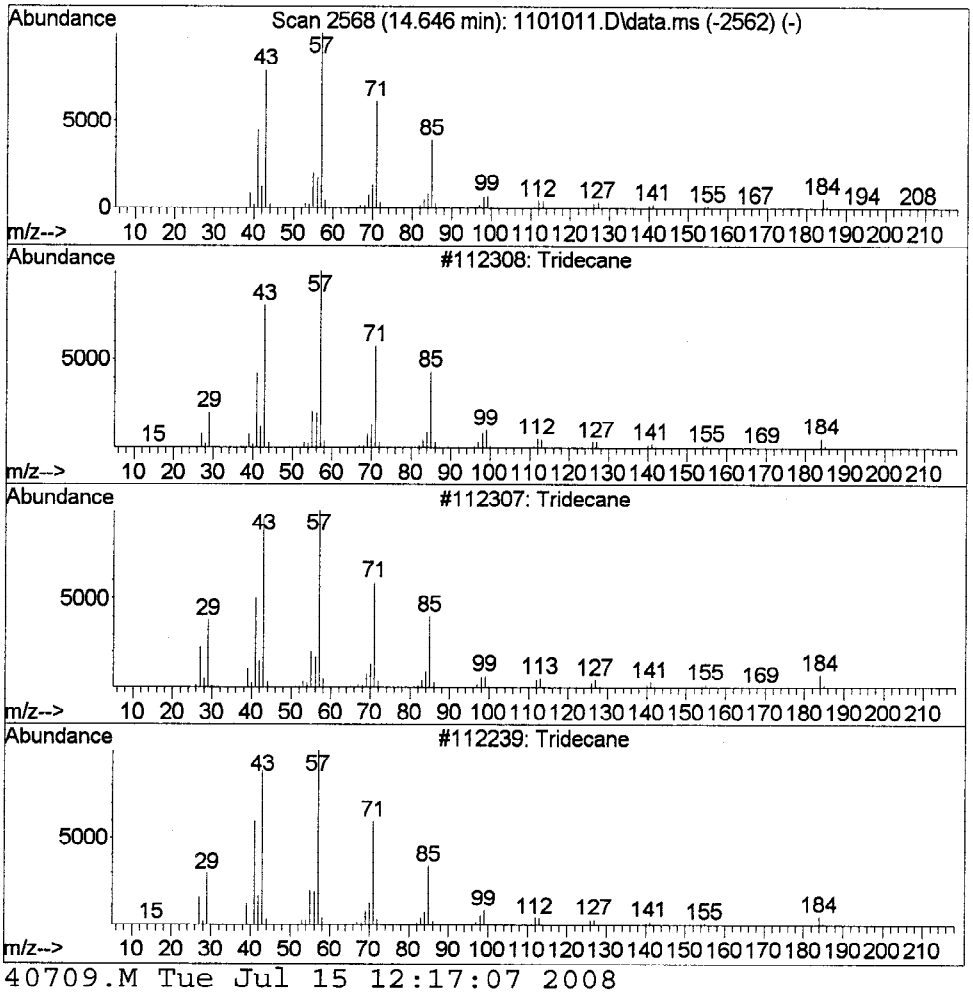
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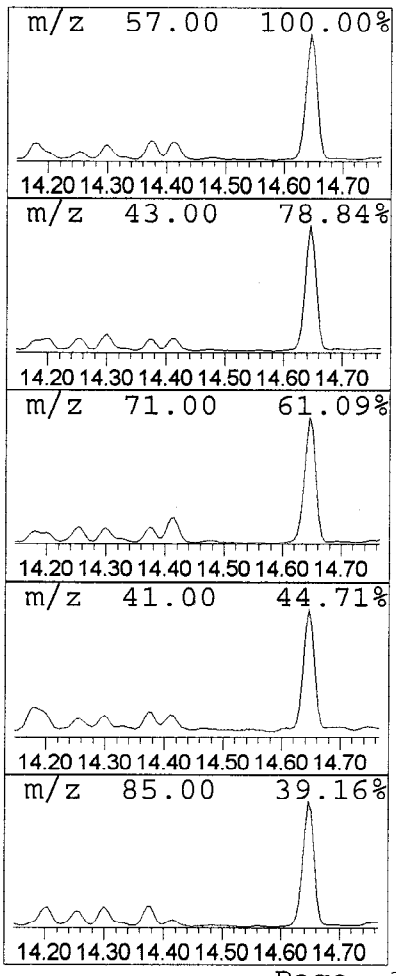
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Peak Number 10 Tridecane Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
14.646	114.34 ug/l	12242300	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Tridecane	184	C13H28	000629-50-5	98
2	Tridecane	184	C13H28	000629-50-5	97
3	Tridecane	184	C13H28	000629-50-5	96
4	Tridecane	184	C13H28	000629-50-5	94
5	Tridecane	184	C13H28	000629-50-5	91





Evergreen Analytical, Inc.

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

Client Sample ID:	Rec1 PT	**Lab Work Order**	08-4787
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-4787-01G
Date Collected:	7/8/08	**Sample Matrix:**	Groundwater
Date Received:	7/9/08	**Lab File ID:**	GAS072112
Date Prepared:	7/21/08	**Method Blank:**	GB072108
Date Analyzed:	7/21/08	**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
Ethane	74-84-0	0.0030	0.0016
Ethene	74-85-1	U	0.0024

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/22/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec1 PT	**Lab Work Order**	08-4787
Client Project ID:	Petroglyph CBM Wells	**Lab Sample ID:**	08-4787-01G
Date Collected:	7/8/08	**Sample Matrix:**	Groundwater
Date Received:	7/9/08	**Lab File ID:**	GAS072113
Date Prepared:	7/21/08	**Method Blank:**	GB072108
Date Analyzed:	7/21/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	10.00

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

Units: mg/L

Analytes	CAS Number	Result	LQL
Methane	74-82-8	4.8	0.0080

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/22/08

QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Evergreen Analytical, Inc.

Date: *14-Jul-08*

Work Order: 08-4787

Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: ANIONS_nondw

Sample ID: **METHOD BLANK**	SampType: **MBLK**	TestCode: **ANIONS_non**	Run ID: **IC-DX300_080710A**	Prep Date: **7/10/2008**	Units: **mg/L**
	Batch ID: **R40521**	TestNo: **E300.0**	FileID:	Analysis Date: **7/10/2008**	SeqNo: **711477**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	U	0.50									
Nitrite-N	U	0.061									
Bromide	U	0.20									
Nitrate-N	U	0.045									
Sulfate	U	0.50									

Sample ID: **LCS**	SampType: **LCS**	TestCode: **ANIONS_non**	Run ID: **IC-DX300_080710A**	Prep Date: **7/10/2008**	Units: **mg/L**
	Batch ID: **R40521**	TestNo: **E300.0**	FileID:	Analysis Date: **7/10/2008**	SeqNo: **711476**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	19.36	1.0	20	0	96.8	90	110	0	0		
Nitrite-N	6.012	0.12	6.09	0	98.7	90	110	0	0		
Bromide	19.4	0.40	20	0	97	90	110	0	0		
Nitrate-N	4.32	0.090	4.518	0	95.6	90	110	0	0		
Sulfate	29.52	1.0	30	0	98.4	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *15-Jul-08*

Work Order: 08-4787

Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 07/11/08**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080711A**	Prep Date: **7/11/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40499**	TestNo: **SM2320B**	FileID: **1**	Analysis Date: **7/11/2008**	SeqNo: **711115**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080711A**	Prep Date: **7/11/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40499**	TestNo: **SM2320B**	FileID: **2**	Analysis Date: **7/11/2008**	SeqNo: **711116**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	99.42	5.0	100	0	99.4	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 7/10/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080710B**	Prep Date: **7/10/2008**	Units: **mg/L**
	Batch ID: **R40471**	TestNo: **SM4500-CN**	FileID: **47**	Analysis Date: **7/10/2008**	SeqNo: **710534**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080710B**	Prep Date: **7/10/2008**	Units: **mg/L**
	Batch ID: **R40471**	TestNo: **SM4500-CN**	FileID: **48**	Analysis Date: **7/10/2008**	SeqNo: **710535**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.09614	0.010	0.104	0	92.4	90	110	0	0		

Qualifiers:

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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
MBLK 07/14/08	**MBLK**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **1**		Analysis Date: **7/14/2008**	SeqNo: **711637**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
MBLK 07/14/08	**MBLK**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **78**		Analysis Date: **7/14/2008**	SeqNo: **711662**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
LCS	**LCS**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **2**		Analysis Date: **7/14/2008**	SeqNo: **711638**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	9.5	0.20	10	0	95	95	105	0	0		

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
LCS	**LCS**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **79**		Analysis Date: **7/14/2008**	SeqNo: **711663**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	10	0.20	10	0	100	95	105	0	0		

Qualifiers:

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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID **LCS-R40431**	SampType: **LCS**	TestCode: **PH_W**	Run ID: **PH_080709B**	Prep Date: **7/9/2008**	Units: **pH Units**
	Batch ID: **R40431**	TestNo: **SM 4500H+ B**	FileID:	Analysis Date: **7/9/2008**	SeqNo: **709899**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.98	1.00	8	0	99.8	99.3	100.7	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 07/15/08**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080715A**	Prep Date: **7/15/2008**	Units: **mg/L**
	Batch ID: **R40566**	TestNo: **SM 4500-S C/**	FileID: **58**	Analysis Date: **7/15/2008**	SeqNo: **712234**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080715A**	Prep Date: **7/15/2008**	Units: **mg/L**
	Batch ID: **R40566**	TestNo: **SM 4500-S C/**	FileID: **59**	Analysis Date: **7/15/2008**	SeqNo: **712235**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.4	0.50	1.7	0	82.4	60	120	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080714A**	Prep Date: **7/14/2008**	Units: **mg/L**
	Batch ID: **R40565**	TestNo: **SM 2540C**	FileID: **47**	Analysis Date: **7/14/2008**	SeqNo: **712196**

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_080714A**	Prep Date: **7/14/2008**	Units: **mg/L**
	Batch ID: **R40565**	TestNo: **SM 2540C**	FileID: **48**	Analysis Date: **7/14/2008**	SeqNo: **712197**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	407	10.0	400	0	102	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 07/11/08**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080711A**	Prep Date: **7/11/2008**	Units: **mg/L**
	Batch ID: **R40504**	TestNo: **SM 2540 D**	FileID: **47**	Analysis Date: **7/11/2008**	SeqNo: **711178**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080711A**	Prep Date: **7/11/2008**	Units: **mg/L**
	Batch ID: **R40504**	TestNo: **SM 2540 D**	FileID: **48**	Analysis Date: **7/11/2008**	SeqNo: **711179**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	287	5.0	300	0	95.7	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *23-Jul-08*

Work Order: 08-4787

Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16023

Sample ID: **MB-16023**	SampType: **MBLK**	TestCode: **200.8_TR**	Run ID: **ICPMS_080714A**	Prep Date: **7/11/2008**	Units: **mg/L**
	Batch ID: **16023**	TestNo: **E200.8**	FileID: **080714A.B\089SMPL.D**	Analysis Date: **7/14/2008**	SeqNo: **711805**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	U	0.00200									
Arsenic	U	0.00200									
Barium	U	0.0100									
Beryllium	U	0.00100									
Boron	U	0.200									
Cadmium	U	0.000500									
Calcium	U	0.400									
Chromium	U	0.00220									
Copper	U	0.0100									
Iron	U	0.200									
Lead	U	0.00100									
Magnesium	U	0.0500									
Manganese	U	0.00500									
Molybdenum	U	0.00500									
Nickel	U	0.0100									
Potassium	U	0.125									
Selenium	U	0.00200									
Silver	U	0.000200									
Strontium	U	0.0980									
Thallium	U	0.00100									
Zinc	0.005025	0.00500									

Sample ID: **LCS-16023**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080714A**	Prep Date: **7/11/2008**	Units: **mg/L**
	Batch ID: **16023**	TestNo: **E200.8**	FileID: **080714A.B\090SMPL.D**	Analysis Date: **7/14/2008**	SeqNo: **711806**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.00993	0.00200	0.01	0	99.3	85	115	0	0		
Arsenic	0.1035	0.00200	0.1	0.001051	104	85	115	0	0		
Barium	0.09545	0.0100	0.1	0.0003588	95.5	85	115	0	0		

Qualifiers:

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H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16023

Sample ID: **LCS-16023**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080714A**	Prep Date: **7/11/2008**	Units: **mg/L**
	Batch ID: **16023**	TestNo: **E200.8**	FileID: **080714A.B\090SMPL.D**	Analysis Date: **7/14/2008**	SeqNo: **711806**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Beryllium	0.01009	0.00100	0.01	0	101	85	115	0	0		
Boron	1.029	0.200	1	0.0073	103	85	115	0	0		
Cadmium	0.01074	0.000500	0.01	0	107	85	115	0	0		
Calcium	1.166	0.400	1.1	0.2262	106	85	115	0	0		
Chromium	0.1019	0.00220	0.1	0.001254	102	85	115	0	0		
Copper	0.0964	0.0100	0.1	0.003238	96.4	85	115	0	0		
Iron	0.9475	0.200	1	0	94.8	85	115	0	0		
Lead	0.021	0.00100	0.02	0	105	85	115	0	0		
Magnesium	0.9445	0.0500	1	0	94.5	85	115	0	0		
Manganese	0.1985	0.00500	0.2	0	99.3	85	115	0	0		
Molybdenum	0.09735	0.00500	0.1	0	97.4	85	115	0	0		
Nickel	0.09545	0.0100	0.1	0	95.5	85	115	0	0		
Potassium	0.9945	0.125	1	0.03156	99.5	85	115	0	0		
Selenium	0.02408	0.00200	0.02	0.001008	120	85	115	0	0		S
Silver	0.009945	0.000200	0.01	0	99.5	85	115	0	0		
Strontium	U	0.0980	0.1	0.001747	97.3	85	115	0	0		
Thallium	0.00508	0.00100	0.005	0	102	85	115	0	0		
Zinc	0.2116	0.00500	0.2	0.005025	103	85	115	0	0		B

Qualifiers:

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X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16109

Sample ID: **MB-16109**	SampType: **MBLK**	TestCode: **200.7_D**	Run ID: **ICP-OPTIMA 5300 DV_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **16109**	TestNo: **E200.7, Rev.**	FileID: **072108PM**	Analysis Date: **7/21/2008**	SeqNo: **714946**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	0	0.400									

Sample ID: **LCS-16109**	SampType: **LCS**	TestCode: **200.7_D**	Run ID: **ICP-OPTIMA 5300 DV_080721A**	Prep Date: **7/21/2008**	Units: **mg/L**
	Batch ID: **16109**	TestNo: **E200.7, Rev.**	FileID: **072108PM**	Analysis Date: **7/21/2008**	SeqNo: **714947**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9.775	0.400	10	0	97.8	80	120	0	0		

Qualifiers:

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R - RPD outside acceptance limits
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X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: 16065

Sample ID: **MB-16065**	SampType: **MBLK**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080716A**	Prep Date: **7/16/2008**	Units: **mg/L**
	Batch ID: **16065**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/16/2008**	SeqNo: **712976**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0	0.000100									

Sample ID: **LCS-16065**	SampType: **LCS**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080716A**	Prep Date: **7/16/2008**	Units: **mg/L**
	Batch ID: **16065**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/16/2008**	SeqNo: **712977**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00101	0.000100	0.001	0	101	85	115	0	0		

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *17-Jul-08*

Work Order: 08-4787

Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16067**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **012.D**	Analysis Date: **7/16/2008**	SeqNo: **712828**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16067**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **013.D**	Analysis Date: **7/16/2008**	SeqNo: **712829**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.273	0.020	0.25	0	109	70	130	0	0		
1,2-Dibromoethane	0.266	0.010	0.25	0	106	70	130	0	0		

Sample ID: **LCS-16067-2**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **014.D**	Analysis Date: **7/16/2008**	SeqNo: **712830**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.274	0.020	0.25	0	110	70	130	0	0		
1,2-Dibromoethane	0.265	0.010	0.25	0	106	70	130	0	0		

Sample ID: **08-4737-01BMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **017.D**	Analysis Date: **7/16/2008**	SeqNo: **712803**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.221	0.020	1	0	122	65	135	0	0		
1,2-Dibromoethane	1.186	0.010	1	0	119	65	135	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
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S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *15-Jul-08*

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6071408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080714A**	Prep Date: **7/14/2008**	Units: **µg/L**
	Batch ID: **R40553**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/14/2008**	SeqNo: **711917**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6071408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080714A**	Prep Date: **7/14/2008**	Units: **µg/L**
	Batch ID: **R40553**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/14/2008**	SeqNo: **711917**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

Qualifiers:

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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: MB6071408	SampType: MBLK	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0501005.D	Analysis Date: 7/14/2008	SeqNo: 711917

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	5.5	0	5	0	110	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.34	0	5	0	107	70	130	0	0		

Sample ID: LCS6071408	SampType: LCS	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0601006.D	Analysis Date: 7/14/2008	SeqNo: 711918

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.41	0.50	5	0	108	70	130	0	0		
Bromobenzene	5.42	0.50	5	0	108	70	130	0	0		
Bromochloromethane	4.82	0.50	5	0	96.4	70	130	0	0		
Bromodichloromethane	5.5	0.50	5	0	110	70	130	0	0		
Bromoform	4.99	0.50	5	0	99.8	70	130	0	0		
Bromomethane	5.06	0.50	5	0	101	70	130	0	0		
n-Butylbenzene	5.88	0.50	5	0	118	70	130	0	0		
sec-Butylbenzene	5.6	0.50	5	0	112	70	130	0	0		
t-Butylbenzene	5.63	0.50	5	0	113	70	130	0	0		
Carbon tetrachloride	5.68	0.50	5	0	114	70	130	0	0		
Chlorobenzene	5.27	0.50	5	0	105	70	130	0	0		
Chloroethane	5.05	0.50	5	0	101	70	130	0	0		
Chloroform	5.33	0.50	5	0	107	70	130	0	0		
Chloromethane	4.57	0.50	5	0	91.4	70	130	0	0		
2-Chlorotoluene	5.46	0.50	5	0	109	70	130	0	0		
4-Chlorotoluene	5.38	0.50	5	0	108	70	130	0	0		
Dibromochloromethane	4.91	0.50	5	0	98.2	70	130	0	0		
Dibromomethane	5.32	0.50	5	0	106	70	130	0	0		
1,2-Dichlorobenzene	5.32	0.50	5	0	106	70	130	0	0		
1,3-Dichlorobenzene	5.35	0.50	5	0	107	70	130	0	0		
1,4-Dichlorobenzene	5.3	0.50	5	0	106	70	130	0	0		
Dichlorodifluoromethane	6.79	0.50	5	0	136	70	130	0	0		S
1,1-Dichloroethane	5.17	0.50	5	0	103	70	130	0	0		
1,2-Dichloroethane	5.23	0.50	5	0	105	70	130	0	0		

Qualifiers:

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R - RPD outside acceptance limits
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X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCS6071408	SampType: LCS	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0601006.D	Analysis Date: 7/14/2008	SeqNo: 711918

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	5.73	0.50	5	0	115	70	130	0	0		
cis-1,2-Dichloroethene	5.53	0.50	5	0	111	70	130	0	0		
trans-1,2-Dichloroethene	5.4	0.50	5	0	108	70	130	0	0		
1,2-Dichloropropane	5.55	0.50	5	0	111	70	130	0	0		
1,3-Dichloropropane	5.35	0.50	5	0	107	70	130	0	0		
2,2-Dichloropropane	5.04	0.50	5	0	101	70	130	0	0		
1,1-Dichloropropene	5.65	0.50	5	0	113	70	130	0	0		
cis-1,3-Dichloropropene	5.46	0.50	5	0	109	70	130	0	0		
trans-1,3-Dichloropropene	4.86	0.50	5	0	97.2	70	130	0	0		
Ethylbenzene	5.52	0.50	5	0	110	70	130	0	0		
Hexachlorobutadiene	5.83	0.50	5	0	117	70	130	0	0		
Isopropylbenzene	4.92	0.50	5	0	98.4	70	130	0	0		
p-Isopropyltoluene	5.53	0.50	5	0	111	70	130	0	0		
Methylene chloride	4.81	0.50	5	0	96.2	70	130	0	0		
Naphthalene	4.63	0.50	5	0	92.6	70	130	0	0		
n-Propylbenzene	5.54	0.50	5	0	111	70	130	0	0		
Styrene	5.5	0.50	5	0	110	70	130	0	0		
1,1,1,2-Tetrachloroethane	5.35	0.50	5	0	107	70	130	0	0		
1,1,2,2-Tetrachloroethane	5.37	0.50	5	0	107	70	130	0	0		
Tetrachloroethene	5.63	0.50	5	0	113	70	130	0	0		
Toluene	5.18	0.50	5	0	104	70	130	0	0		
1,2,3-Trichlorobenzene	5.22	0.50	5	0	104	70	130	0	0		
1,2,4-Trichlorobenzene	5.14	0.50	5	0	103	70	130	0	0		
1,1,1-Trichloroethane	5.58	0.50	5	0	112	70	130	0	0		
1,1,2-Trichloroethane	5.6	0.50	5	0	112	70	130	0	0		
Trichloroethene	5.63	0.50	5	0	113	70	130	0	0		
Trichlorofluoromethane	5.28	0.50	5	0	106	70	130	0	0		
1,2,3-Trichloropropane	5.61	0.50	5	0	112	70	130	0	0		
1,2,4-Trimethylbenzene	5.71	0.50	5	0	114	70	130	0	0		
1,3,5-Trimethylbenzene	5.55	0.50	5	0	111	70	130	0	0		
Vinyl chloride	6.21	0.50	5	0	124	70	130	0	0		

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X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCS6071408	SampType: LCS	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0601006.D	Analysis Date: 7/14/2008	SeqNo: 711918

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	10.83	0.50	10	0	108	70	130	0	0		
o-Xylene	5.26	0.50	5	0	105	70	130	0	0		
1,3-Dichloropropene	10.32	0.50	10	0	103	70	130	0	0		
Xylenes, Total	16.09	0.50	15	0	107	70	130	0	0		
Total THM (Summation of above)	20.73	0.50	20	0	104	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	5.05	0	5	0	101	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.16	0	5	0	103	70	130	0	0		

Sample ID: LCSD6071408	SampType: LCSD	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 2101021.D	Analysis Date: 7/14/2008	SeqNo: 711933

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.21	0.50	5	0	104	70	130	5.41	3.77	30	
Bromobenzene	5.58	0.50	5	0	112	70	130	5.42	2.91	30	
Bromochloromethane	4.95	0.50	5	0	99	70	130	4.82	2.66	30	
Bromodichloromethane	5.32	0.50	5	0	106	70	130	5.5	3.33	30	
Bromoform	5	0.50	5	0	100	70	130	4.99	0.200	30	
Bromomethane	3.74	0.50	5	0	74.8	70	130	5.06	30.0	30	
n-Butylbenzene	5.24	0.50	5	0	105	70	130	5.88	11.5	30	
sec-Butylbenzene	5.13	0.50	5	0	103	70	130	5.6	8.76	30	
t-Butylbenzene	5.25	0.50	5	0	105	70	130	5.63	6.99	30	
Carbon tetrachloride	5.05	0.50	5	0	101	70	130	5.68	11.7	30	
Chlorobenzene	5.28	0.50	5	0	106	70	130	5.27	0.190	30	
Chloroethane	4.86	0.50	5	0	97.2	70	130	5.05	3.83	30	
Chloroform	5.34	0.50	5	0	107	70	130	5.33	0.187	30	
Chloromethane	4.14	0.50	5	0	82.8	70	130	4.57	9.87	30	
2-Chlorotoluene	5.44	0.50	5	0	109	70	130	5.46	0.367	30	
4-Chlorotoluene	5.19	0.50	5	0	104	70	130	5.38	3.60	30	
Dibromochloromethane	4.98	0.50	5	0	99.6	70	130	4.91	1.42	30	
Dibromomethane	5.53	0.50	5	0	111	70	130	5.32	3.87	30	
1,2-Dichlorobenzene	5.36	0.50	5	0	107	70	130	5.32	0.749	30	

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X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCSD6071408	SampType: LCSD	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 2101021.D	Analysis Date: 7/14/2008	SeqNo: 711933

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	5.23	0.50	5	0	105	70	130	5.35	2.27	30	
1,4-Dichlorobenzene	5.26	0.50	5	0	105	70	130	5.3	0.758	30	
Dichlorodifluoromethane	6.35	0.50	5	0	127	70	130	6.79	6.70	30	
1,1-Dichloroethane	5.01	0.50	5	0	100	70	130	5.17	3.14	30	
1,2-Dichloroethane	5.41	0.50	5	0	108	70	130	5.23	3.38	30	
1,1-Dichloroethene	5.47	0.50	5	0	109	70	130	5.73	4.64	30	
cis-1,2-Dichloroethene	5.56	0.50	5	0	111	70	130	5.53	0.541	30	
trans-1,2-Dichloroethene	5.18	0.50	5	0	104	70	130	5.4	4.16	30	
1,2-Dichloropropane	5.43	0.50	5	0	109	70	130	5.55	2.19	30	
1,3-Dichloropropane	5.57	0.50	5	0	111	70	130	5.35	4.03	30	
2,2-Dichloropropane	4.61	0.50	5	0	92.2	70	130	5.04	8.91	30	
1,1-Dichloropropene	5.14	0.50	5	0	103	70	130	5.65	9.45	30	
cis-1,3-Dichloropropene	5.36	0.50	5	0	107	70	130	5.46	1.85	30	
trans-1,3-Dichloropropene	4.83	0.50	5	0	96.6	70	130	4.86	0.619	30	
Ethylbenzene	5.22	0.50	5	0	104	70	130	5.52	5.59	30	
Hexachlorobutadiene	5.01	0.50	5	0	100	70	130	5.83	15.1	30	
Isopropylbenzene	4.65	0.50	5	0	93	70	130	4.92	5.64	30	
p-Isopropyltoluene	5.08	0.50	5	0	102	70	130	5.53	8.48	30	
Methylene chloride	4.96	0.50	5	0	99.2	70	130	4.81	3.07	30	
Naphthalene	4.76	0.50	5	0	95.2	70	130	4.63	2.77	30	
n-Propylbenzene	5.12	0.50	5	0	102	70	130	5.54	7.88	30	
Styrene	5.45	0.50	5	0	109	70	130	5.5	0.913	30	
1,1,1,2-Tetrachloroethane	5.22	0.50	5	0	104	70	130	5.35	2.46	30	
1,1,2,2-Tetrachloroethane	5.72	0.50	5	0	114	70	130	5.37	6.31	30	
Tetrachloroethene	5.29	0.50	5	0	106	70	130	5.63	6.23	30	
Toluene	5.05	0.50	5	0	101	70	130	5.18	2.54	30	
1,2,3-Trichlorobenzene	5.26	0.50	5	0	105	70	130	5.22	0.763	30	
1,2,4-Trichlorobenzene	4.96	0.50	5	0	99.2	70	130	5.14	3.56	30	
1,1,1-Trichloroethane	4.93	0.50	5	0	98.6	70	130	5.58	12.4	30	
1,1,2-Trichloroethane	5.65	0.50	5	0	113	70	130	5.6	0.889	30	
Trichloroethene	5.29	0.50	5	0	106	70	130	5.63	6.23	30	

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCSD6071408**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080714A**					Prep Date: **7/14/2008**		Units: **µg/L**	
	Batch ID: **R40553**	TestNo: **E524.2**	FileID: **2101021.D**					Analysis Date: **7/14/2008**		SeqNo: **711933**	
Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	5.02	0.50	5	0	100	70	130	5.28	5.05	30	
1,2,3-Trichloropropane	5.87	0.50	5	0	117	70	130	5.61	4.53	30	
1,2,4-Trimethylbenzene	5.42	0.50	5	0	108	70	130	5.71	5.21	30	
1,3,5-Trimethylbenzene	5.28	0.50	5	0	106	70	130	5.55	4.99	30	
Vinyl chloride	5.59	0.50	5	0	112	70	130	6.21	10.5	30	
m,p-Xylene	10.27	0.50	10	0	103	70	130	10.83	5.31	30	
o-Xylene	5.11	0.50	5	0	102	70	130	5.26	2.89	30	
1,3-Dichloropropene	10.19	0.50	10	0	102	70	130	10.32	1.27	30	
Xylenes, Total	15.38	0.50	15	0	103	70	130	16.09	4.51	30	
Total THM (Summation of above)	20.64	0.50	20	0	103	70	130	20.73	0.435	30	
Surr: 1,2-Dichlorobenzene-d4	5.4	0	5	0	108	70	130	0	0	0	
Surr: 4-Bromofluorobenzene	5.28	0	5	0	106	70	130	0	0	0	

Qualifiers:

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X - See case narrative

Evergreen Analytical, Inc.

Date: *22-Jul-08*

Work Order: 08-4787

Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **GB072108**	SampType: **MBLK**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072104**	Analysis Date: **7/21/08**	SeqNo: **714853**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS072108**	SampType: **LCS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072105**	Analysis Date: **7/21/08**	SeqNo: **714854**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.122	0.016	0.9548	0	118	70	130	0	0		
Ethene	1.262	0.024	0.8913	0	142	70	140	0	0		S
Methane	0.5747	0.0080	0.5094	0	113	70	130	0	0		

Sample ID: **LCSD072108**	SampType: **LCSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072106**	Analysis Date: **7/21/08**	SeqNo: **714855**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.129	0.016	0.9548	0	118	70	130	1.122	0.659	30	
Ethene	1.27	0.024	0.8913	0	142	70	140	1.262	0.627	30	S
Methane	0.5794	0.0080	0.5094	0	114	70	130	0.5747	0.825	30	

Sample ID: **08-5116-01BMS**	SampType: **MS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072109**	Analysis Date: **7/21/08**	SeqNo: **714850**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.01	0.016	0.9548	0	106	70	130	0	0		
Ethene	1.128	0.024	0.8913	0	127	70	140	0	0		
Methane	0.5168	0.0080	0.5094	0	101	70	130	0	0		

Qualifiers:

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R - RPD outside acceptance limits
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X - See case narrative

Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **08-5116-01BMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072110**	Analysis Date: **7/21/08**	SeqNo: **714851**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	0.993	0.016	0.9548	0	104	70	130	1.01	1.68	30	
Ethene	1.107	0.024	0.8913	0	124	70	140	1.128	1.88	30	
Methane	0.5074	0.0080	0.5094	0	99.6	70	130	0.5168	1.84	30	

Qualifiers:

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S - Spike Recovery outside acceptance limits
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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical Laboratory

August 06, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-4787
Client Project ID: Petroglyph CBM Wells

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com

WORK ORDER Summary Evergreen Analytical, Inc. 08-4911

Rpt To: Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055
(719) 742-5570

Email To: kquast@norwestcorp.com
Email To: Tmelland@petroglyphenergy.com

7/31/2008 10:30:34 AM

Client Project ID:

QC Level: LEVEL I+

Comments: PDF + EDD in Pinery

Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Test Code	Test Name	Hold	MS	Date Due	Hold Time
08-4911-01A	Rec 4 PT	Water	7/10/08 0000	7/11/08	RAD226/228	Radium 226/228	☐	☐	7/25/08	1/06/09
08-4911-01B	Rec 4 PT	Water	7/10/08 0000	7/11/08	ALBETA	Gross Alpha-Beta	☐	☐	7/25/08	1/06/09
08-4911-01B	Rec 4 PT	Water	7/10/08 0000	7/11/08	TS_SUB	Total Solids for Gross A B	☐	☐	7/25/08	7/17/08
08-4911-01C	Rec 4 PT	Water	7/10/08 0000	7/11/08	ANIONS_W *	300.0: DW Anions by IC	☐	☐	7/25/08	7/12/08
08-4911-01D	Rec 4 PT	Water	7/10/08 0000	7/11/08	F_W	Fluoride	☐	☐	7/25/08	8/07/08
08-4911-01E	Rec 4 PT	Water	7/10/08 0000	7/11/08	200.8_TR *	200.8: Total Metals	☐	☐	7/25/08	1/06/09
08-4911-01E	Rec 4 PT	Water	7/10/08 0000	7/11/08	245.1_DKW	245.1: Mercury, Drinking Water	☐	☐	7/25/08	8/07/08
08-4911-01F	Rec 4 PT	Water	7/10/08 0000	7/11/08	504 *	504: Standard List	☐	☐	7/25/08	7/24/08
08-4911-01G	Rec 4 PT	Water	7/10/08 0000	7/11/08	MEEP_W *	RSK175M: MEE	☐	☐	7/25/08	7/24/08
08-4911-01H	Rec 4 PT	Water	7/10/08 0000	7/11/08	524 *	524.2: Standard List	☐	☐	7/25/08	7/24/08
08-4911-01H	Rec 4 PT	Water	7/10/08 0000	7/11/08	VOATICS	VOA TICS (Largest 10)	☐	☐	7/25/08	7/24/08
08-4911-01I	Rec 4 PT	Water	7/10/08 0000	7/11/08	CN_TW	Total Cyanide	☐	☐	7/25/08	7/24/08
08-4911-01J	Rec 4 PT	Water	7/10/08 0000	7/11/08	SULF_W	Total Sulfide	☐	☐	7/25/08	7/17/08
08-4911-01K	Rec 4 PT	Water	7/10/08 0000	7/11/08	ALK_WGRP *	Alkalinity	☐	☐	7/25/08	7/24/08
08-4911-01K	Rec 4 PT	Water	7/10/08 0000	7/11/08	PH_W	Discharge Water pH	☐	☐	7/25/08	7/10/08
08-4911-01K	Rec 4 PT	Water	7/10/08 0000	7/11/08	TDS_W	Total Dissolved Solids (TDS)	☐	☐	7/25/08	7/17/08
08-4911-01K	Rec 4 PT	Water	7/10/08 0000	7/11/08	TSS	Total Suspended Solids (TSS)	☐	☐	7/25/08	7/17/08

Definitions: * - Test Code has a Select List

002

CHAIN OF CUSTODY RECORD / ANALYTICAL SERVICES AGREEMENT **

Evergreen Analytical Laboratory Inc.

Page 1 of 1

CLIENT INFORMATION

Mail **Original** Report to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979 124 N Main
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571 E-mail tmelland@petroglyphenergy.com
REPORT ALSO BY ☐ FAX ☑ PDF ☑ EDD
REPORT CHROMATOGRAMS ☐ YES
Mail Invoice to: Petroglyph Energy
Attn Tom Melland
Address PO Box 979
City La Veta State CO Zip 81055
Tel # 719-742-5570 Fax # 719-742-5571
Project ID#
P.O. Quote
Sampler Steve Peterson
NOTE: *Identify Known Hazards Below*

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.

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 (check anaylsis): Radium 226/228	Gross Alpha-Beta	300.0 DW Anions by IC	Fluoride	200.8 Drinking Water Metals Required	Total Solids Surfactants ABS/Alkalinity	504.1 EDB/DBCP	RSKSOP-175M	VOA TICs	Total Cyanide	Total Sulfide	TDS ISS pH
Rec 4 PT	7-10-08						4	1	1	1	1	1	2	3	3	1	1	1
Does this analysis involve property transfer? ☐Yes or ☐No							A	B	C	D	E	F	G	H	I	J	K	

← # bottles

Preserved

For Laboratory Use Only
W.O. # 08-4911
B.O.F. # 23779
C/S (O) 835 1UV3
C/S (I) 835 1UB
Temp. °C 10.6 / Ice ✓
Seals Present Y / N / NA
Samples Pres Y / N / NA
Headspace Y / N / NA
By MO /

01

CN pH > 12
metals pH 2

visual fail turbidity
200.8 TR for
metals: no

Sample Fraction

Instructions:

** **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
Thomas Melland	7-10-08 16:30						7/11/8 1030A

Evergreen Analytical, Inc.

Date: *14-Aug-08*

Lab Order: 08-4911
Client Project ID

CASE NARRATIVE

SAMPLE RECEIVING

Custody seals were present and intact.
The temperature of the sample(s) upon arrival was 10.6 °C but samples were received on ice.
Sample(s) were received in good condition and in the proper container.
Thr pH sample was received out of holding time.
VOC sample(s) were marked as preserved on the bottle labels.
VOC sample(s) were received with no headspace present. NJO

QUALITY ASSURANCE (QA)

Analyses performed on samples in this work order by EAL meet the requirements of the EAL Quality Assurance Program unless otherwise explained. Analyses of RCRA samples meet the requirements of NELAC and Utah Rule R444-14 unless otherwise explained. Analyses of discharge samples meet the requirements of 40 CFR Part 136 unless otherwise explained. CMS

CLIENT SERVICES

The sample was logged in for alkalinity and 524 VOA analysis per the quotation.
The metal, alkalinity, and anion analytes were selected per the quotation. EKH

GENERAL CHEMISTRY

The Fluoride result exceeded the drinking water MCL (4.0 mg/L). The pH required analysis out of holding time (H). There are no other anomalies to report. BP/CMS

METALS ANALYSIS

Method 200.8: Zinc was detected in the method blank (MB) at 0.006 mg/L. This amount was not subtracted from the sample result. There are no other anomalies to report. MB

GAS CHROMATOGRAPHY

Method 504.1: There are no anomalies to report. AE

Method RSK175M: The laboratory control spike (LCS) and laboratory control spike duplicate (LCSD) recovery for Ethene is 2 % above the QC limits. Since the bias is high and the sample is non-detect for Ethene, no further action is required. There are no other anomalies to report. MDS

Evergreen Analytical, Inc.

Date: *14-Aug-08*

Lab Order: 08-4911

Client Project ID

CASE NARRATIVE

GAS CHROMATOGRAPHY/MASS SPECTROMETRY

Method 524.2: The laboratory control spike (LCS) recovery for Dichlorodifluoromethane is above QC limits but the laboratory control spike duplicate (LCSD) recovery is within the QC limits. Since the bias is high and the sample is non-detect for that analyte, no further action is required. There are no other anomalies to report. DC/CMS

005

AUG 14 2008

Evergreen Analytical, Inc.
4036 Youngfield Street
Wheat Ridge, Colorado 80033-3862
(303) 425-6021

CHAIN-OF-CUSTODY RECORD

PO Number: 7922

WorkOrder: 08-4911

Outside Laboratory:

Hazen Research, Inc.
4601 Indiana St
Golden, CO 80403

TEL: (303) 279-4501
FAX: (303) 278-1528

Acct #:

11-Jul-08

Sample ID	Matrix	Collection Date	Bottle Type	Requested Tests (4)						
				ALPHABETA	RAD226/228	TS				
08-4911-01A	Water	7/10/2008	1LPHNO3		1					
08-4911-01B	Water	7/10/2008	1LPHNO3	1		1				

Comments:

		Date/Time			Date/Time
Relinquished by:	Ken Fh	7-14-08 1:45PM	**Received by:**	Diane Tupton	7-14-08 1345
Relinquished by:			**Received by:**		

AUG 14 2008

Hazen Research, Inc.
4601 Indiana Street
Golden, CO 80403 USA
Tel: (303) 279-4501
Fax: (303) 278-1528

DATE	August 13, 2008
HRI PROJECT	009-93
HRI SERIES NO	G282/08
DATE REC'D.	7/14/2008
CUST. P.O.#	7922

Evergreen Analytical, Inc.
Carl Smits
4036 Youngfield
Wheat Ridge, CO 80033

REPORT OF ANALYSIS

SAMPLE NO. G282/08-1

SAMPLE IDENTIFICATION: 08-4911-01A, B - sampled on 07/10/2008

PARAMETER	RESULT	DETECTION LIMIT	METHOD	ANALYSIS DATE	ANALYST
Gross Alpha (+-Precision*), pCi/l (T)	38(+-2)	0.9	SM 7110 B	7/31/2008 @ 0755	AN
Gross Beta (+-Precision*), pCi/l (T)	29(+-1)	0.8	SM 7110 B	7/31/2008 @ 0755	AN
Radium-226 (+-Precision*), pCi/l (T)	2.3(+-0.9)	0.3	SM 7500-Ra B	7/22/2008 @ 1035	RPO
Radium-228 (+-Precision*), pCi/l (T)	4.0(+-1.0)	0.7	EPA Ra-05	8/4/2008 @ 1547	RG/AN
Total Solids, mg/l	1970	10	EPA 160.3	7/16/2008	LH

*Variability of the radioactive decay process (counting error) at the 95% confidence level, 1.96 sigma.
Certification ID's: CO/EPA CO00008; CT PH-0152; KY 90076; KS E-10265; NH 232808; NYELAP 11417; PADEP 68-00551; RI LAO00284; WI 998376610

Results reported herein relate only to discrete samples submitted by the client. Hazen Research, Inc. does not warrant that the results are representative of anything other than the samples that were received in the laboratory.

CODES: (T) = Total (D) = Dissolved (S) = Suspended (R) = Total Recoverable
(PD) = Potentially Dissolved < = Less Than

By: _____
Robert Rostad
Laboratory Manager

Evergreen Analytical, Inc.

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

Client Sample ID: Rec 4 PT
Client Project ID:
Date Collected: 7/10/08 0000
Date Received: 7/11/08

Lab Work Order: 08-4911
Lab Sample ID: 08-4911-01
Sample Matrix: Water

ANIONS BY IC

Method: E300.0 **Prep Method:**

Date Prepared: 7/11/08
Date Analyzed: 7/11/08 1453
Lab File ID: 19
Method Blank: MB 071108
Dilution Factor: 1
Lab Fraction ID: 08-4911-01C

Analytes	CAS Number	Result	LQL	Units
Chloride	7647-14-5	25.1	0.50	mg/L
Nitrite-N		U	0.0040	mg/L
Bromide	7647-15-6	0.410	0.050	mg/L
Nitrate-N		U	0.010	mg/L
Sulfate	7778-80-2	32.2	0.50	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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/15/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Rec 4 PT
Client Project ID:
Date Collected: 7/10/08 0000
Date Received: 7/11/08

Lab Work Order: 08-4911
Lab Sample ID: 08-4911-01
Sample Matrix: Water

ALKALINITY

Method: SM2320B **Prep Method:**

Date Prepared: 7/11/08
Date Analyzed: 7/11/08
Lab File ID: 241
Method Blank: MBLK 07/11/08
Dilution Factor: 1
Lab Fraction ID: 08-4911-01K

Analytes	CAS Number	Result	LQL	Units
Total Alkalinity		130	5.0	mg/L CaCO3
Bicarbonate		99.3	5.0	mg/L CaCO3
Carbonate		30.2	5.0	mg/L CaCO3

TOTAL CYANIDE

Method: SM4500-CN E **Prep Method:**

Date Prepared: 7/16/08
Date Analyzed: 7/16/08
Lab File ID: 52
Method Blank: MBLK 7/16/08
Dilution Factor: 1
Lab Fraction ID: 08-4911-01I

Analytes	CAS Number	Result	LQL	Units
Total Cyanide		U	0.010	mg/L

FLUORIDE

Method: SM 4500-F C **Prep Method:**

Date Prepared: 7/14/08
Date Analyzed: 7/14/08
Lab File ID: 18
Method Blank: MBLK 07/14/08
Dilution Factor: 1
Lab Fraction ID: 08-4911-01D

Analytes	CAS Number	Result	LQL	Units
Fluoride	16984-48-8	11.7 *	0.20	mg/L

DISCHARGE WATER PH

Method: SM 4500H+ B **Prep Method:**

Comments: This is a field parameter with a 15min. holding time.

Date Prepared: 7/11/08
Date Analyzed: 7/11/08 1452
Dilution Factor: 1
Lab Fraction ID: 08-4911-01K

Analytes	CAS Number	Result	LQL	Units
pH		9.29 H	1.00	pH Units

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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/21/08

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862

(303) 425-6021

Client Sample ID: Rec 4 PT
Client Project ID:
Date Collected: 7/10/08 0000
Date Received: 7/11/08

Lab Work Order 08-4911
Lab Sample ID: 08-4911-01
Sample Matrix: Water

TOTAL SULFIDE

Method: SM 4500-S C/F **Prep Method:**

Date Prepared: 7/15/08
Date Analyzed: 7/15/08
Lab File ID: 62
Method Blank: MBLK 07/15/08
Dilution Factor: 1
Lab Fraction ID: 08-4911-01J

Analytes	CAS Number	Result	LQL	Units
Total Sulfide		U	0.50	mg/L

TOTAL DISSOLVED SOLIDS (TDS)

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

Date Prepared: 7/14/08
Date Analyzed: 7/14/08
Lab File ID: 22
Method Blank: MBLK 7/14/08
Dilution Factor: 1
Lab Fraction ID: 08-4911-01K

Analytes	CAS Number	Result	LQL	Units
Total Dissolved Solids		680	10.0	mg/L

TOTAL SUSPENDED SOLIDS (TSS)

Method: SM 2540 D **Prep Method:**

Date Prepared: 7/15/08
Date Analyzed: 7/15/08
Lab File ID: 12
Method Blank: MBLK 7/15/08
Dilution Factor: 1
Lab Fraction ID: 08-4911-01K

Analytes	CAS Number	Result	LQL	Units
Total Suspended Solids		920	5.0	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 analysis exceeded analytical holding time
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S - Spike Recovery outside accepted limits
U - Compound analyzed for but not detected
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/17/2008

Evergreen Analytical, Inc.

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

Client Sample ID: Rec 4 PT
Client Project ID:
Date Collected: 7/10/08
Date Received: 7/11/08

Lab Work Order 08-4911
Lab Sample ID: 08-4911-01
Sample Matrix: Water

TOTAL METALS

Method: E200.8 **Prep Method: E200.8**

Date Prepared: 7/16/08
Date Analyzed: 7/17/08
Lab File ID: 080717A.B\040SMPL.D
Method Blank: MB-16073
Dilution Factor: 1
Lab Fraction ID: 08-4911-01E

Analytes	CAS Number	Result	LQL	Units
Antimony	7440-36-0	U	0.00200	mg/L
Arsenic	7440-38-2	0.00560	0.00200	mg/L
Barium	7440-39-3	0.442	0.0100	mg/L
Beryllium	7440-41-7	0.00401	0.00100	mg/L
Boron	7440-42-8	U	0.200	mg/L
Cadmium	7440-43-9	U	0.000500	mg/L
Calcium	7440-70-2	22.8	0.400	mg/L
Chromium	7440-47-3	0.134	0.00220	mg/L
Copper	7440-50-8	0.157	0.0100	mg/L
Iron	7439-89-6	104	0.200	mg/L
Lead	7439-92-1	0.126	0.00100	mg/L
Magnesium	7439-95-4	15.8	0.0500	mg/L
Manganese	7439-96-5	1.70	0.00500	mg/L
Molybdenum	7439-98-7	0.0217	0.00500	mg/L
Nickel	7440-02-0	0.0878	0.0100	mg/L
Potassium	7440-09-7	7.13	0.125	mg/L
Selenium	7782-49-2	U	0.00200	mg/L
Silver	7440-22-4	U	0.000200	mg/L
Sodium	7440-23-5	95.6	0.500	mg/L
Strontium	7440-24-6	0.451	0.0980	mg/L
Thallium	7440-28-0	U	0.00100	mg/L
Zinc	7440-66-6	0.474 B	0.00500	mg/L

MMB
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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/18/08

Evergreen Analytical, Inc.

4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862

(303) 425-6021

Client Sample ID: Rec 4 PT
Client Project ID:
Date Collected: 7/10/08
Date Received: 7/11/08

Lab Work Order 08-4911
Lab Sample ID: 08-4911-01
Sample Matrix: Water

MERCURY, DRINKING WATER

Method: E245.1 **Prep Method: E245.1**

Date Prepared: 7/16/08
Date Analyzed: 7/16/08
Lab File ID: 71708
Method Blank: MB-16065
Dilution Factor: 1
Lab Fraction ID: 08-4911-01E

Analytes	CAS Number	Result	LQL	Units
Mercury	7439-97-6	U	0.00010	mg/L

MB
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 analysis 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), TCLP limit, or if compound is undetected, LQL exceeds MCL.

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

Print Date: 7/18/08

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec 4 PT	**Lab Work Order:**	08-4911
Client Project ID:		**Lab Sample ID:**	08-4911-01F
Date Collected:	7/10/2008	**Sample Matrix:**	Water
Date Received:	7/11/2008	**Lab File ID:**	037.D
Date Prepared:	7/16/2008	**Method Blank:**	MB-16067
Date Analyzed:	7/16/2008	**Prep Factor:**	0.057
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E504.1 **EDB/DBCP**
Prep Method: E504.1

Units: µg/L

Analytes	CAS Number	Result	LQL
1,2-Dibromo-3-chloropropane	96-12-8	U	0.02
1,2-Dibromoethane	106-93-4	U	0.01

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value.Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/17/2008

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec 4 PT	**Lab Work Order**	08-4911
Client Project ID:		**Lab Sample ID:**	08-4911-01G
Date Collected:	7/10/08	**Sample Matrix:**	Water
Date Received:	7/11/08	**Lab File ID:**	GAS072116
Date Prepared:	7/21/08	**Method Blank:**	GB072108
Date Analyzed:	7/21/08	**Prep Factor:**	1.000
Percent Moisture	NA	**Dilution Factor:**	10.00

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

Analytes	CAS Number	Result	LQL
Methane	74-82-8	3.5	0.0080

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* - Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/22/08

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Rec 4 PT	**Lab Work Order:**	08-4911
Client Project ID:		**Lab Sample ID:**	08-4911-01H
Date Collected:	7/10/2008	**Sample Matrix:**	Water
Date Received:	7/11/2008	**Lab File ID:**	1601016.D
Date Prepared:	7/14/2008	**Method Blank:**	MB6071408
Date Analyzed:	7/14/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result	LQL
Benzene	71-43-2	4.27	0.50
Bromobenzene	108-86-1	U	0.50
Bromochloromethane	74-97-5	U	0.50
Bromodichloromethane	75-27-4	U	0.50
Bromoform	75-25-2	U	0.50
Bromomethane	74-83-9	U	0.50
n-Butylbenzene	104-51-8	U	0.50
sec-Butylbenzene	135-98-8	U	0.50
t-Butylbenzene	98-06-6	U	0.50
Carbon tetrachloride	56-23-5	U	0.50
Chlorobenzene	108-90-7	U	0.50
Chloroethane	75-00-3	U	0.50
Chloroform	67-66-3	U	0.50
Chloromethane	74-87-3	U	0.50
2-Chlorotoluene	95-49-8	U	0.50
4-Chlorotoluene	106-43-4	U	0.50
Dibromochloromethane	124-48-1	U	0.50
Dibromomethane	74-95-3	U	0.50
1,2-Dichlorobenzene	95-50-1	U	0.50
1,3-Dichlorobenzene	541-73-1	U	0.50
1,4-Dichlorobenzene	106-46-7	U	0.50
Dichlorodifluoromethane	75-71-8	U	0.50
1,1-Dichloroethane	75-34-3	U	0.50
1,2-Dichloroethane	107-06-2	U	0.50
1,1-Dichloroethene	75-35-4	U	0.50
cis-1,2-Dichloroethene	156-59-2	U	0.50
trans-1,2-Dichloroethene	156-60-5	U	0.50
1,2-Dichloropropane	78-87-5	U	0.50
1,3-Dichloropropane	142-28-9	U	0.50
2,2-Dichloropropane	590-20-7	U	0.50
1,1-Dichloropropene	563-58-6	U	0.50
cis-1,3-Dichloropropene	10061-01-5	U	0.50
trans-1,3-Dichloropropene	10061-02-6	U	0.50
1,3-Dichloropropene	542-75-6	U	0.50
Ethylbenzene	100-41-4	3.53	0.50
Hexachlorobutadiene	87-68-3	U	0.50
Isopropylbenzene	98-82-8	U	0.50
p-Isopropyltoluene	99-87-6	U	0.50
Methylene chloride	75-09-2	U	0.50
Naphthalene	91-20-3	1.99	0.50

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**

B - Analyte detected in the Method Blank, value not subtracted from result
E - Extrapolated value. Value exceeds calibration range
H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/15/2008

Evergreen Analytical, Inc.
4036 Youngfield Street, Wheat Ridge, Colorado 80033-3862
(303) 425-6021

Client Sample ID:	Rec 4 PT	**Lab Work Order:**	08-4911
Client Project ID:		**Lab Sample ID:**	08-4911-01H
Date Collected:	7/10/2008	**Sample Matrix:**	Water
Date Received:	7/11/2008	**Lab File ID:**	1601016.D
Date Prepared:	7/14/2008	**Method Blank:**	MB6071408
Date Analyzed:	7/14/2008	**Prep Factor:**	1.000
Percent Moisture:	NA	**Dilution Factor:**	1.00

Method: E524.2 — VOLATILE COMPOUNDS

Prep Method: E524.2

Units: µg/L

Analytes	CAS Number	Result		LQL
n-Propylbenzene	103-65-1	U		0.50
Styrene	100-42-5	U		0.50
1,1,1,2-Tetrachloroethane	630-20-6	U		0.50
1,1,2,2-Tetrachloroethane	79-34-5	U		0.50
Tetrachloroethene	127-18-4	U		0.50
Toluene	108-88-3	3.75		0.50
1,2,3-Trichlorobenzene	87-61-6	U		0.50
1,2,4-Trichlorobenzene	120-82-1	U		0.50
1,1,1-Trichloroethane	71-55-6	U		0.50
1,1,2-Trichloroethane	79-00-5	0.950		0.50
Trichloroethene	79-01-6	U		0.50
Trichlorofluoromethane	75-69-4	U		0.50
1,2,3-Trichloropropane	96-18-4	U		0.50
1,2,4-Trimethylbenzene	95-63-6	1.28		0.50
1,3,5-Trimethylbenzene	108-67-8	U		0.50
Vinyl chloride	75-01-4	U		0.50
m,p-Xylene	1330-20-7	1.69		0.50
o-Xylene	95-47-6	1.61		0.50
Xylenes, Total	1330-20-7	3.30		0.50
Total THM (Summation of above)		U		0.50
Surr: 1,2-Dichlorobenzene-d4	2199-69-1	104	**QC Limits:**	70-130 %REC
Surr: 4-Bromofluorobenzene	460-00-4	99	**QC Limits:**	70-130 %REC

Analyst **Approved**

Qualifiers: **See case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
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H - Prep or Analytical holding time exceeded
S - Spike Recovery outside acceptance limits
X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

Print Date: 7/15/2008

Tentatively Identified Compound (LSC) summary

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
arbon disulfide	2.802	1.5	ug/l	157584	1	6.105	535355	5.0
enzene, 1-ethy...	11.054	1.4	ug/l	152155	1	6.105	535355	5.0
enzene, 2-ethy...	12.533	1.7	ug/l	180334	1	6.105	535355	5.0
enzene, 1-ethy...	12.575	1.6	ug/l	170754	1	6.105	535355	5.0
enzene, 1-ethy...	12.632	6.3	ug/l	677344	1	6.105	535355	5.0
enzene, 1,2,3,...	13.104	3.4	ug/l	365385	1	6.105	535355	5.0
enzene, 1,2,4,...	13.146	5.2	ug/l	556358	1	6.105	535355	5.0
-Phenylbut-1-ene	13.330	1.7	ug/l	186015	1	6.105	535355	5.0
enzene, (1-met...	13.455	2.7	ug/l	288059	1	6.105	535355	5.0
enzene, 2-ethy...	13.529	2.4	ug/l	261706	1	6.105	535355	5.0

Evergreen Analytical, Inc.

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

Client Sample ID:	Rec 4 PT	**Lab Work Order**	08-4911
Client Project ID:		**Lab Sample ID:**	08-4911-01G
Date Collected:	7/10/08	**Sample Matrix:**	Water
Date Received:	7/11/08	**Lab File ID:**	GAS072114
Date Prepared:	7/21/08	**Method Blank:**	GB072108
Date Analyzed:	7/21/08	**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
Ethane	74-84-0	0.0054	0.0016
Ethene	74-85-1	U	0.0024

Analyst **Approved**

Qualifiers: **See the case narrative for a discussion**
B - Analyte detected in the Method Blank, value not subtracted from result
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X - See case narrative
* -Value exceeded the Maximum Contamination Level (MCL), TCLP limit, or if compound is undetected, LQL exceeds MCL.

Qualifiers: U - Analyte not detected at or above the reporting limit
J - Estimated value below the LQL

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

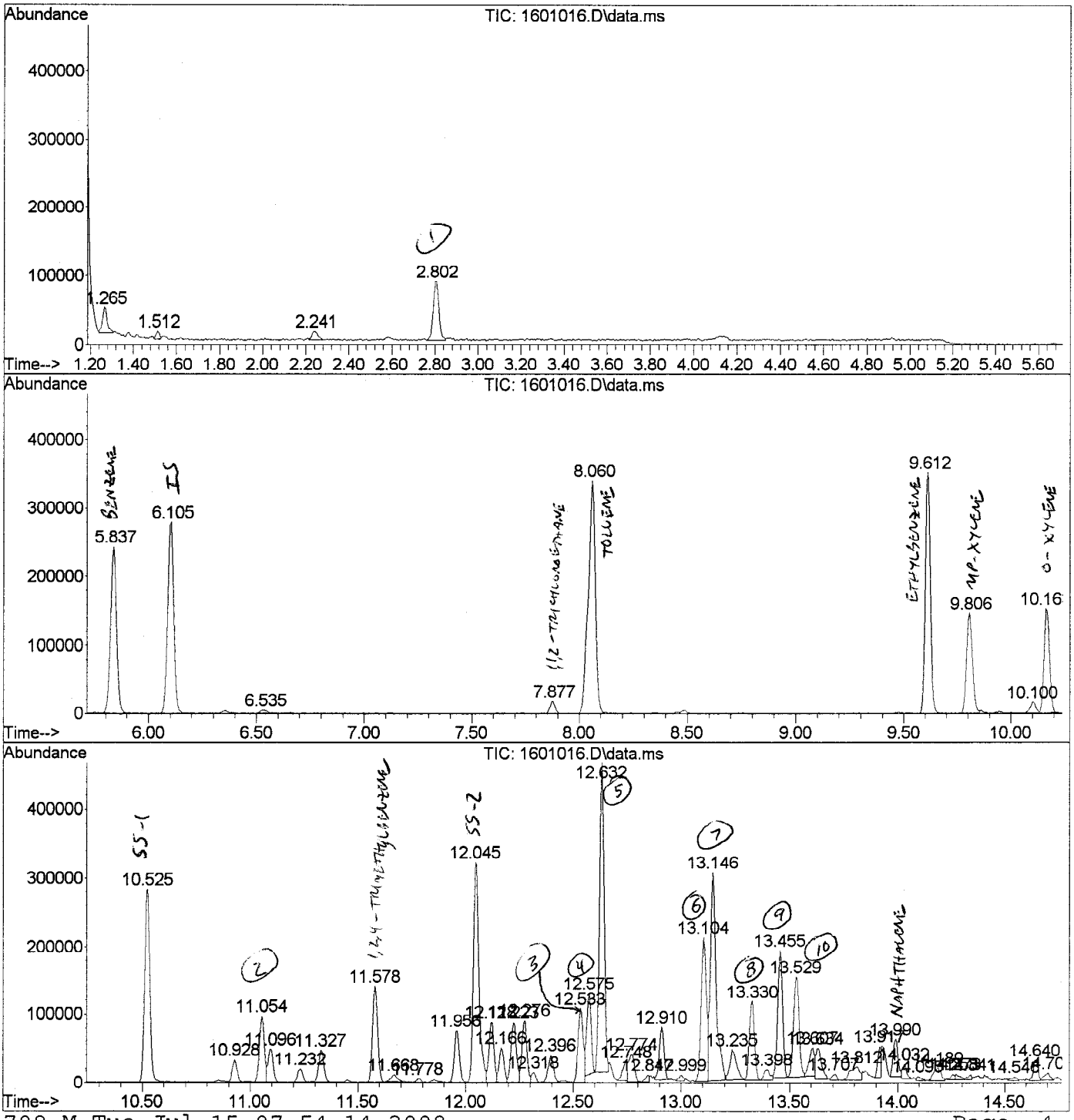
Print Date: 7/22/08

LSC Report - Integrated Chromatogram

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

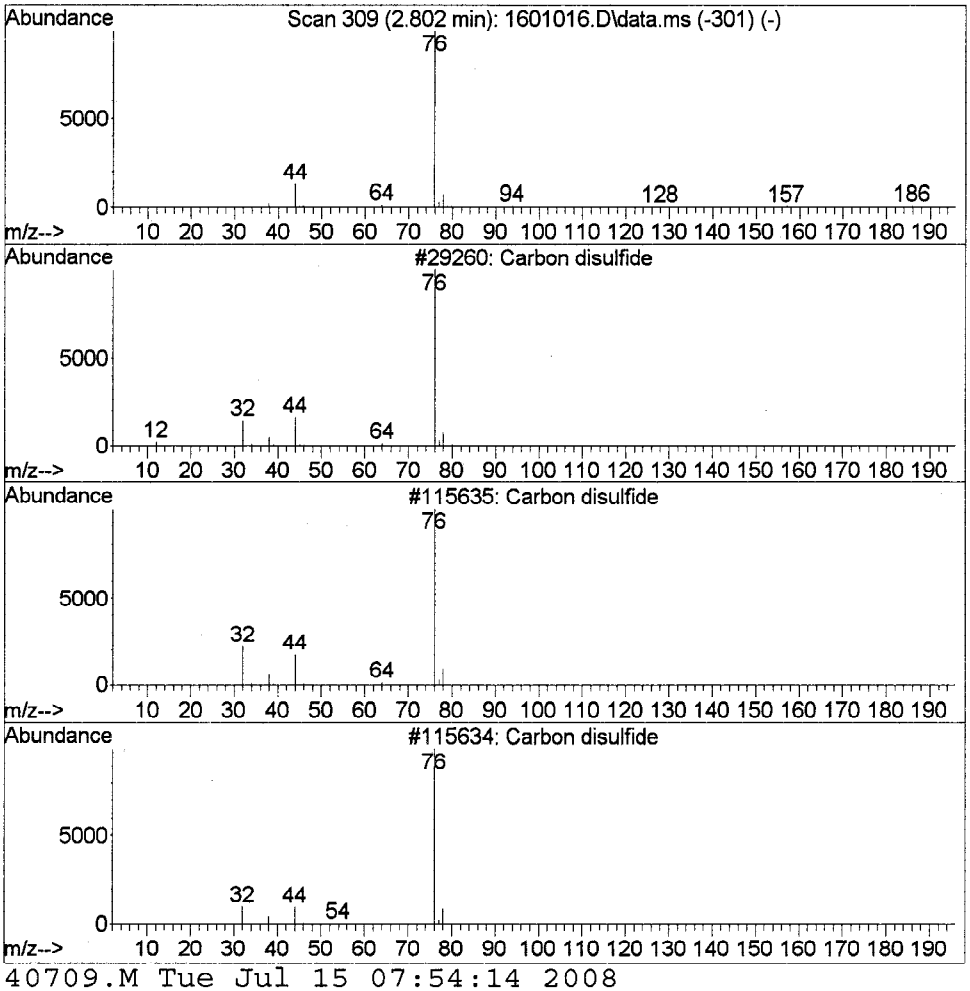
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TIC Integration Parameters: LSCINT.P

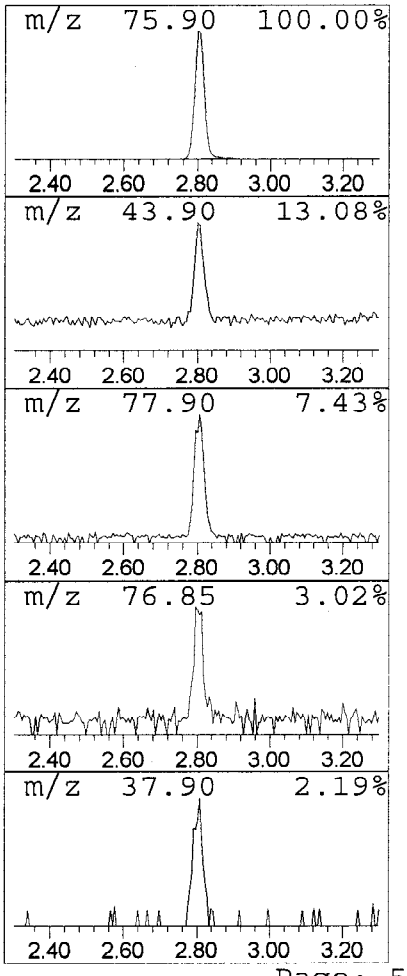
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Peak Number 1 Carbon disulfide Concentration Rank 9

R.T.	EstConc	Area	Relative to ISTD	R.T.
2.802	1.47 ug/l	157584	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Carbon disulfide	76	CS2	000075-15-0	90
2	Carbon disulfide	76	CS2	000075-15-0	83
3	Carbon disulfide	76	CS2	000075-15-0	83
4	1-Propanethiol	76	C3H8S	000107-03-9	78
5	Thiourea	76	CH4N2S	000062-56-6	7





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

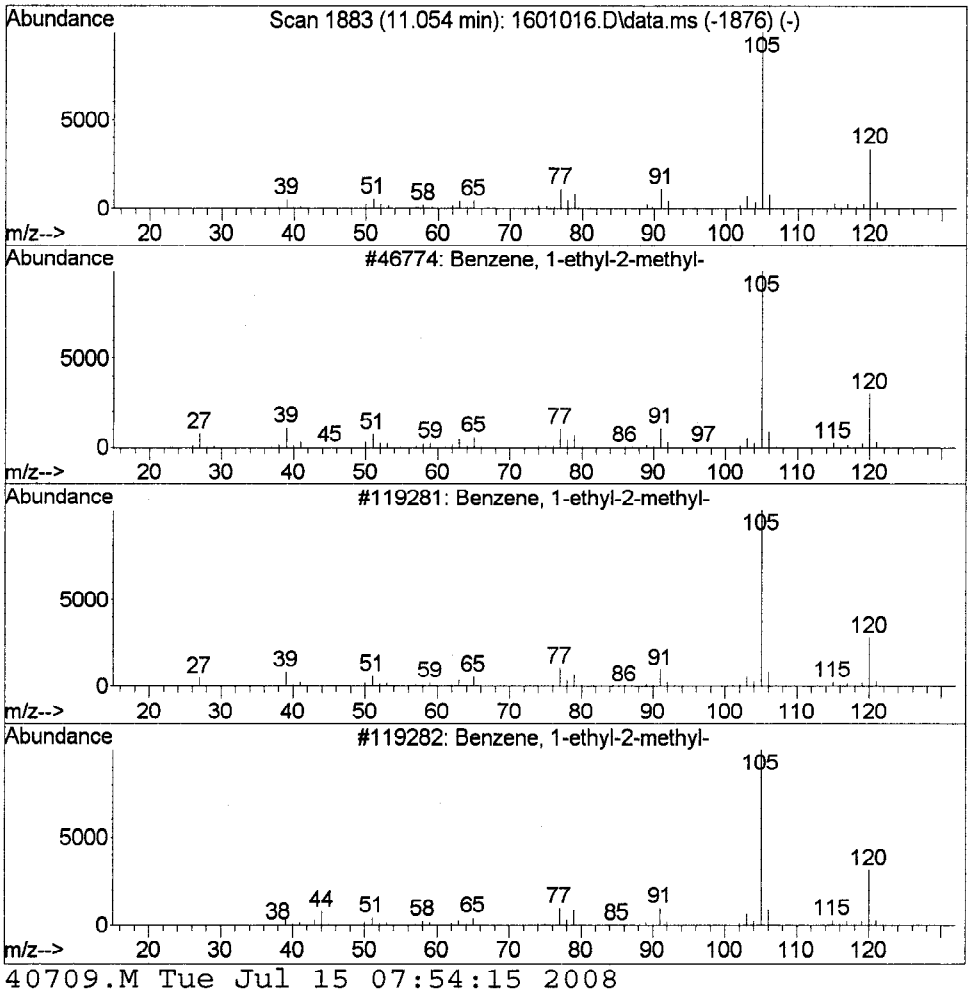
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TIC Integration Parameters: LSCINT.P

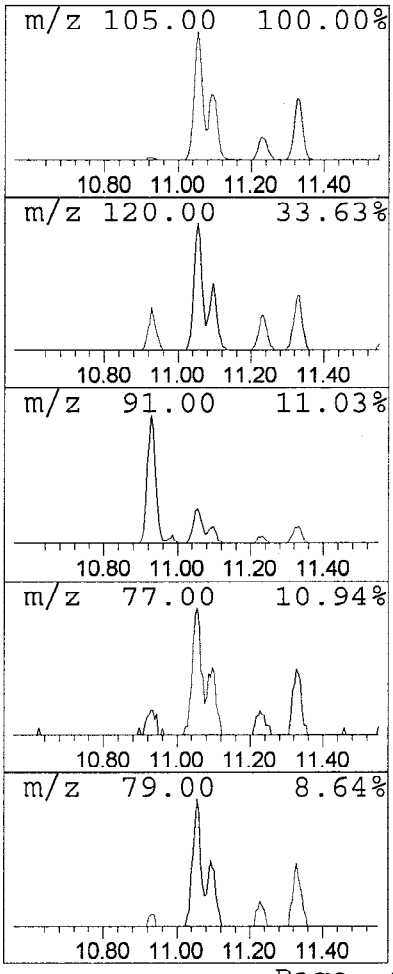
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Peak Number 2 Benzene, 1-ethyl-2-methyl- Concentration Rank 10

R.T.	EstConc	Area	Relative to ISTD	R.T.
11.054	1.42 ug/l	152155	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 1-ethyl-2-methyl-	120	C9H12	000611-14-3	95
2	Benzene, 1-ethyl-2-methyl-	120	C9H12	000611-14-3	95
3	Benzene, 1-ethyl-2-methyl-	120	C9H12	000611-14-3	94
4	Benzene, 1-ethyl-4-methyl-	120	C9H12	000622-96-8	94
5	Benzene, 1-ethyl-3-methyl-	120	C9H12	000620-14-4	94





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

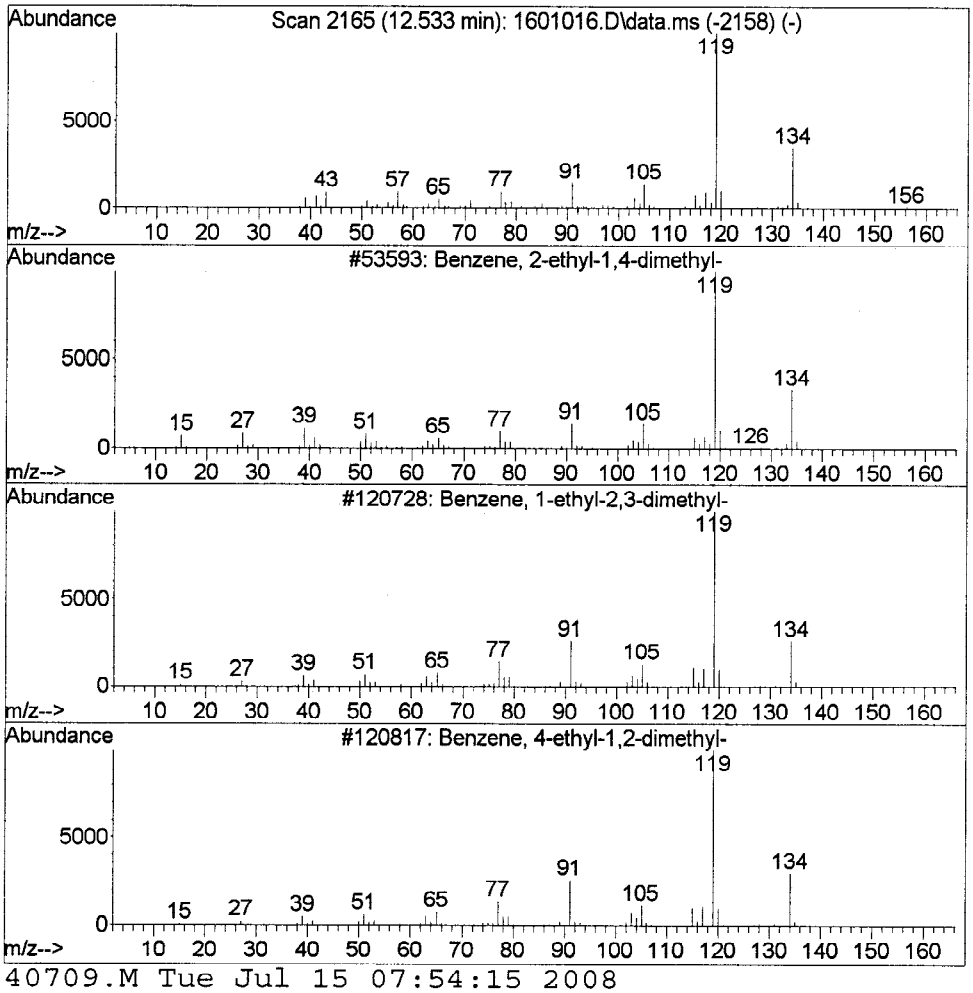
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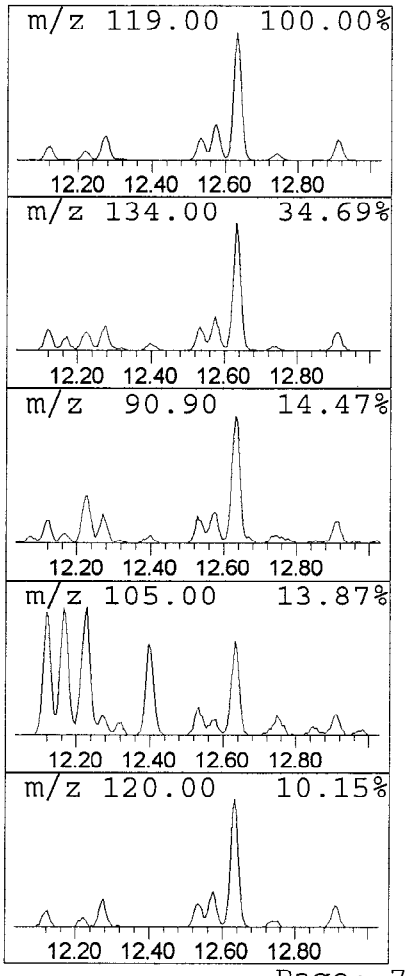
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Peak Number 3 Benzene, 2-ethyl-1,4-dimethyl- Concentration Rank 7

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.533	1.68 ug/l	180334	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 2-ethyl-1,4-dimethyl-	134	C10H14	001758-88-9	97
2	Benzene, 1-ethyl-2,3-dimethyl-	134	C10H14	000933-98-2	96
3	Benzene, 4-ethyl-1,2-dimethyl-	134	C10H14	000934-80-5	95
4	Benzene, 4-ethyl-1,2-dimethyl-	134	C10H14	000934-80-5	94
5	Benzene, 2-ethyl-1,4-dimethyl-	134	C10H14	001758-88-9	94





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

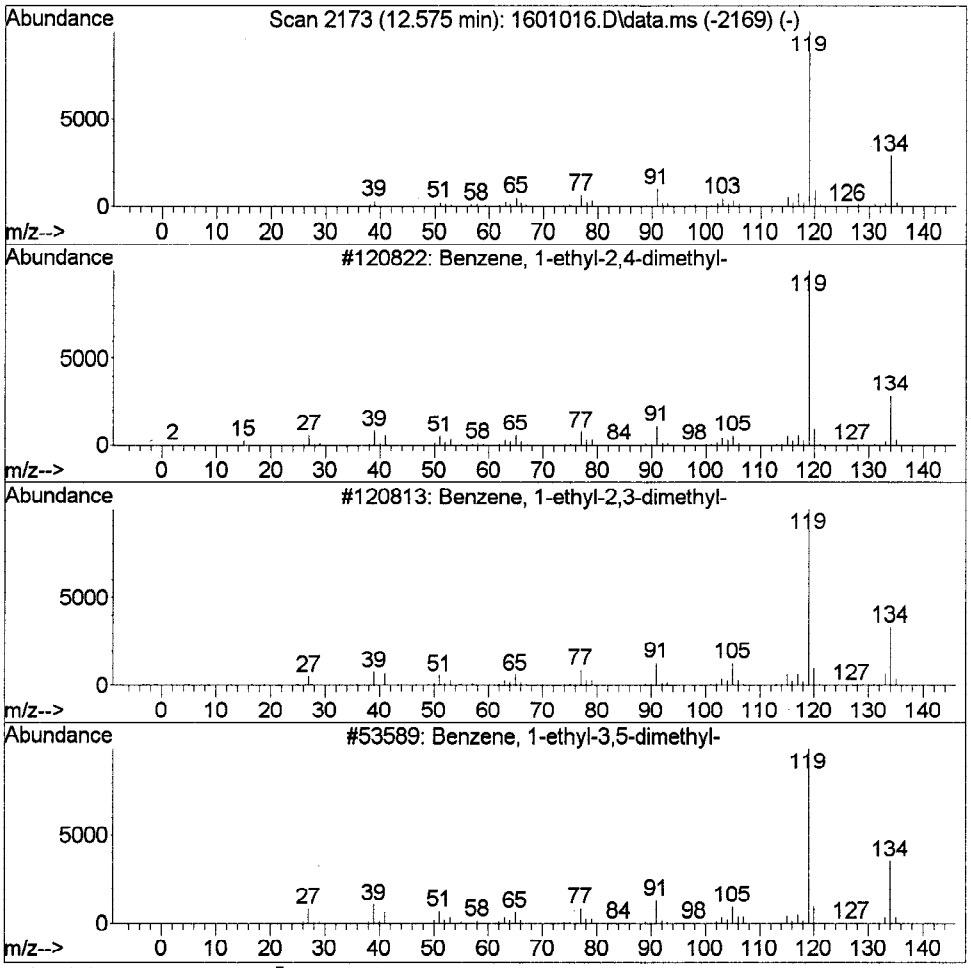
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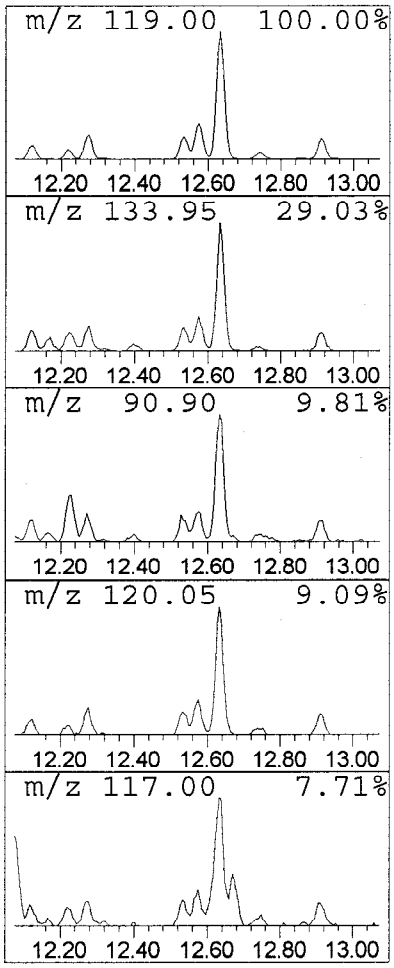
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Peak Number 4 Benzene, 1-ethyl-2,4-dimethyl- Concentration Rank 8

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.575	1.59 ug/l	170754	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 1-ethyl-2,4-dimethyl-	134	C10H14	000874-41-9	94
2	Benzene, 1-ethyl-2,3-dimethyl-	134	C10H14	000933-98-2	91
3	Benzene, 1-ethyl-3,5-dimethyl-	134	C10H14	000934-74-7	91
4	Benzene, 1-ethyl-2,4-dimethyl-	134	C10H14	000874-41-9	91
5	Benzene, 2-ethyl-1,3-dimethyl-	134	C10H14	002870-04-4	91





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

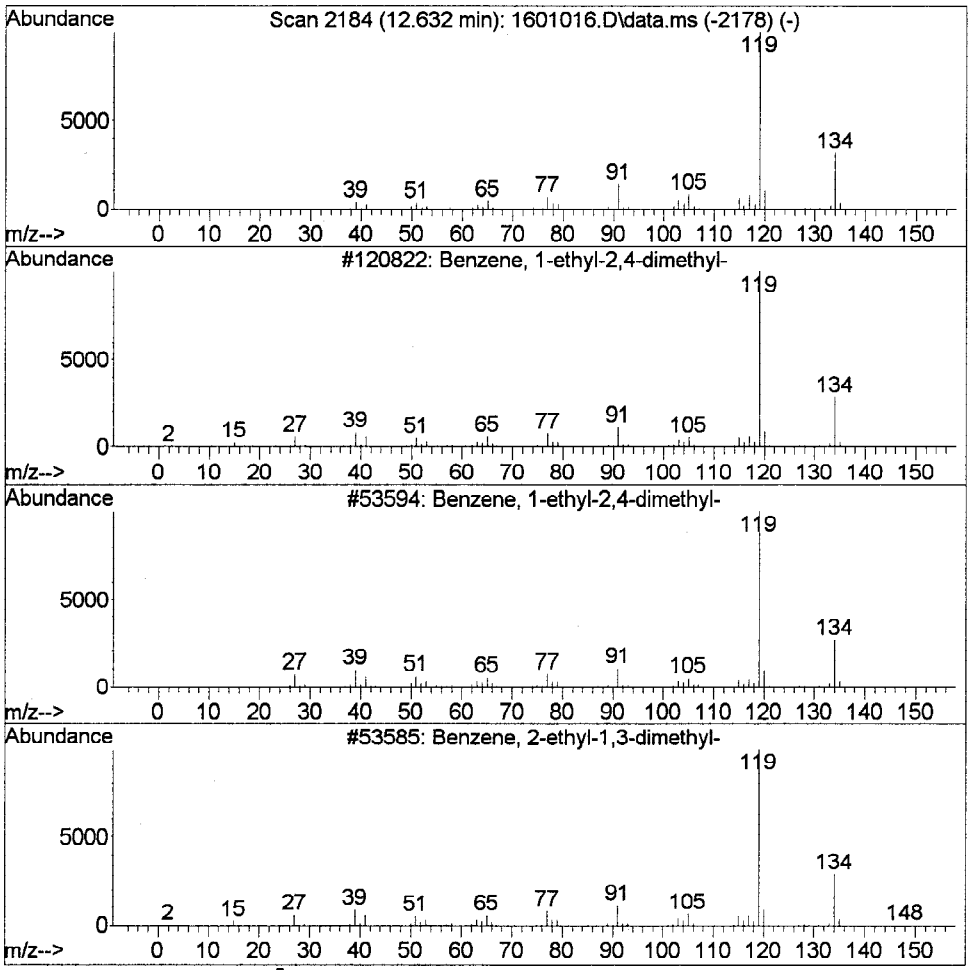
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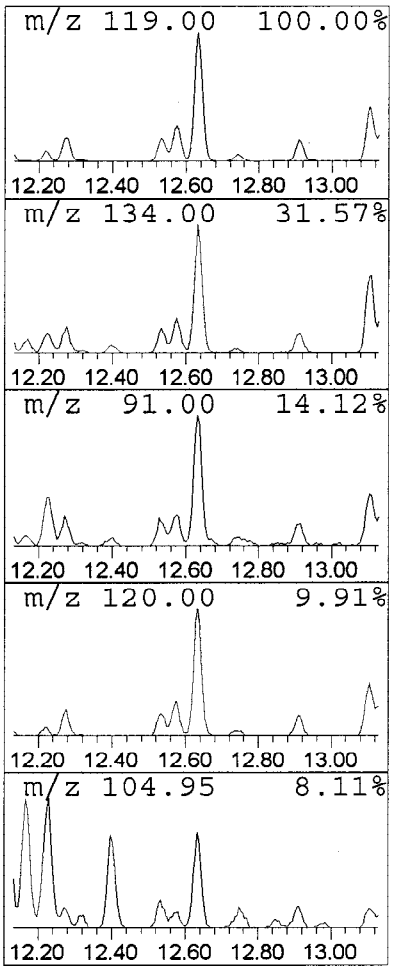
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Peak Number 5 Benzene, 1-ethyl-2,4-dimethyl- Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.632	6.33 ug/l	677344	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 1-ethyl-2,4-dimethyl-	134	C10H14	000874-41-9	95
2	Benzene, 1-ethyl-2,4-dimethyl-	134	C10H14	000874-41-9	95
3	Benzene, 2-ethyl-1,3-dimethyl-	134	C10H14	002870-04-4	95
4	Benzene, 2-ethyl-1,3-dimethyl-	134	C10H14	002870-04-4	95
5	Benzene, 4-ethyl-1,2-dimethyl-	134	C10H14	000934-80-5	95





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

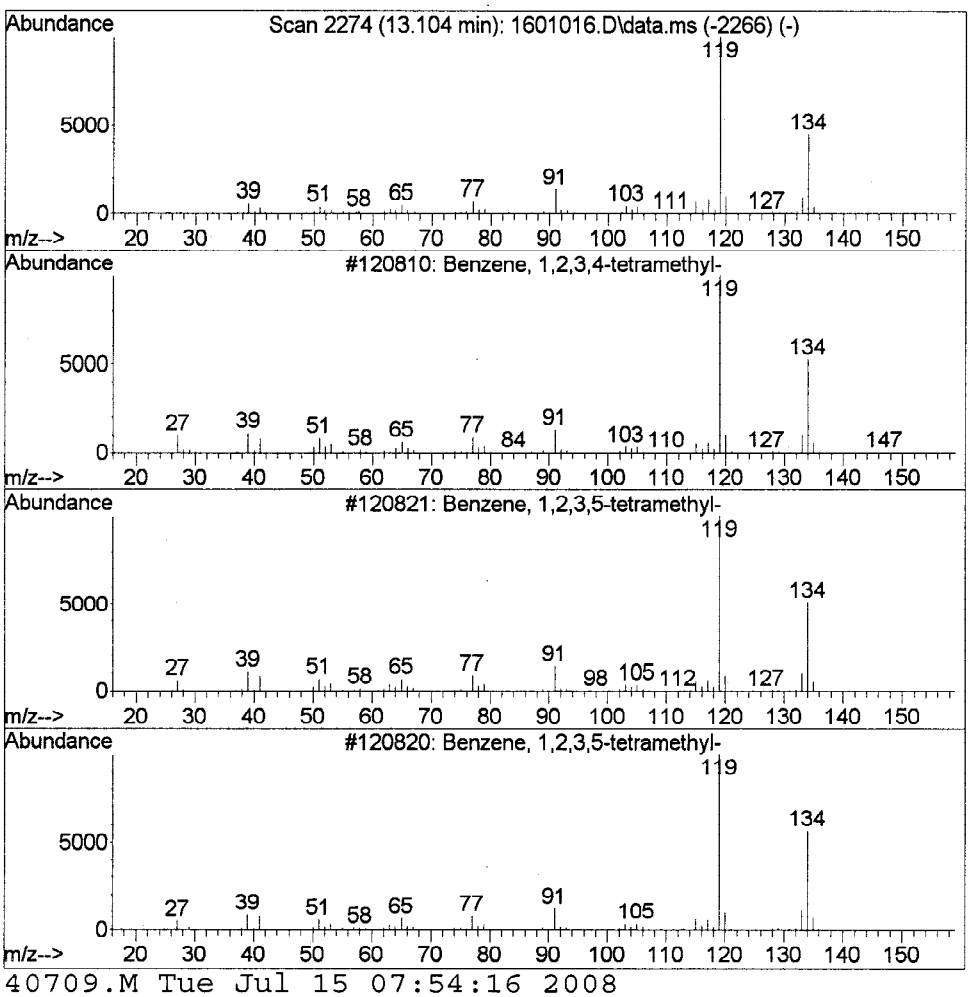
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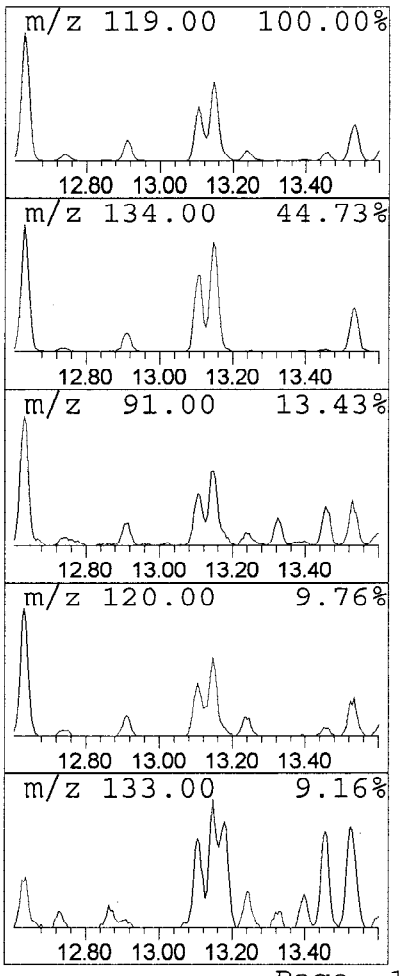
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Peak Number 6 Benzene, 1,2,3,4-tetramethyl- Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.104	3.41 ug/l	365385	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 1,2,3,4-tetramethyl-	134	C10H14	000488-23-3	95
2	Benzene, 1,2,3,5-tetramethyl-	134	C10H14	000527-53-7	95
3	Benzene, 1,2,3,5-tetramethyl-	134	C10H14	000527-53-7	94
4	Benzene, 1,2,3,5-tetramethyl-	134	C10H14	000527-53-7	94
5	Benzene, 1,2,3,4-tetramethyl-	134	C10H14	000488-23-3	94





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

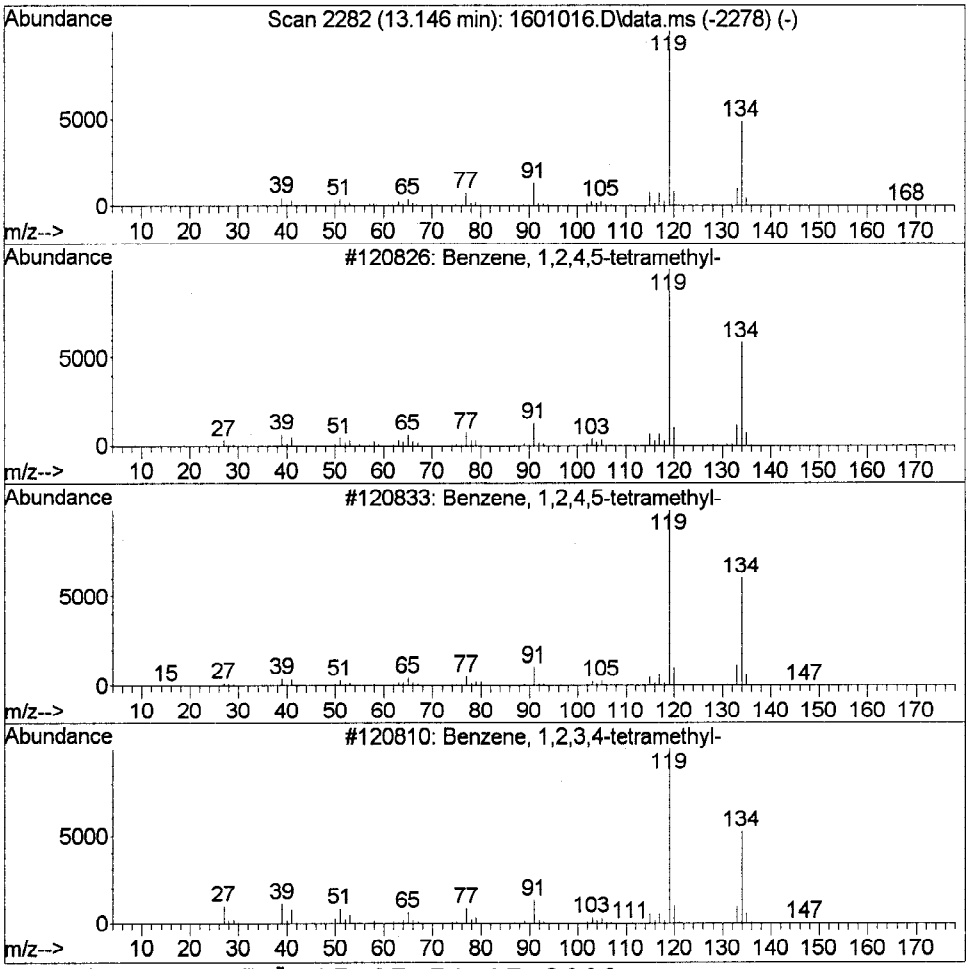
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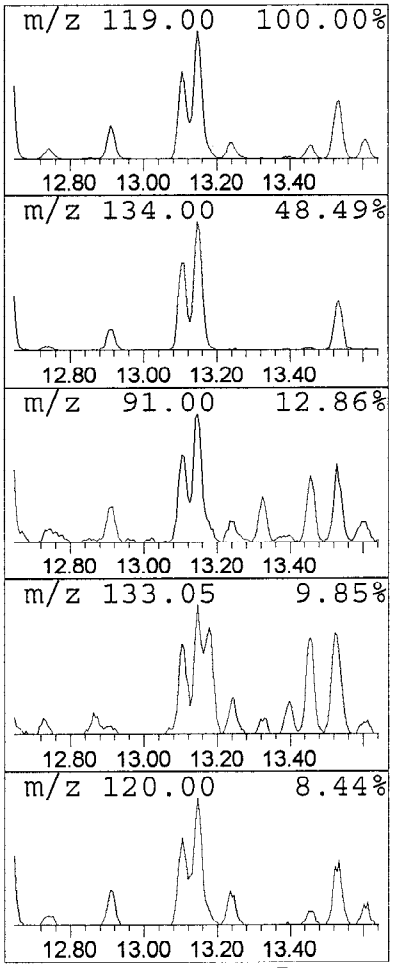
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Peak Number 7 Benzene, 1,2,4,5-tetramethyl- Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.146	5.20 ug/l	556358	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 1,2,4,5-tetramethyl-	134	C10H14	000095-93-2	97
2	Benzene, 1,2,4,5-tetramethyl-	134	C10H14	000095-93-2	95
3	Benzene, 1,2,3,4-tetramethyl-	134	C10H14	000488-23-3	95
4	Benzene, 1,2,3,5-tetramethyl-	134	C10H14	000527-53-7	95
5	Benzene, 1,2,3,5-tetramethyl-	134	C10H14	000527-53-7	95





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

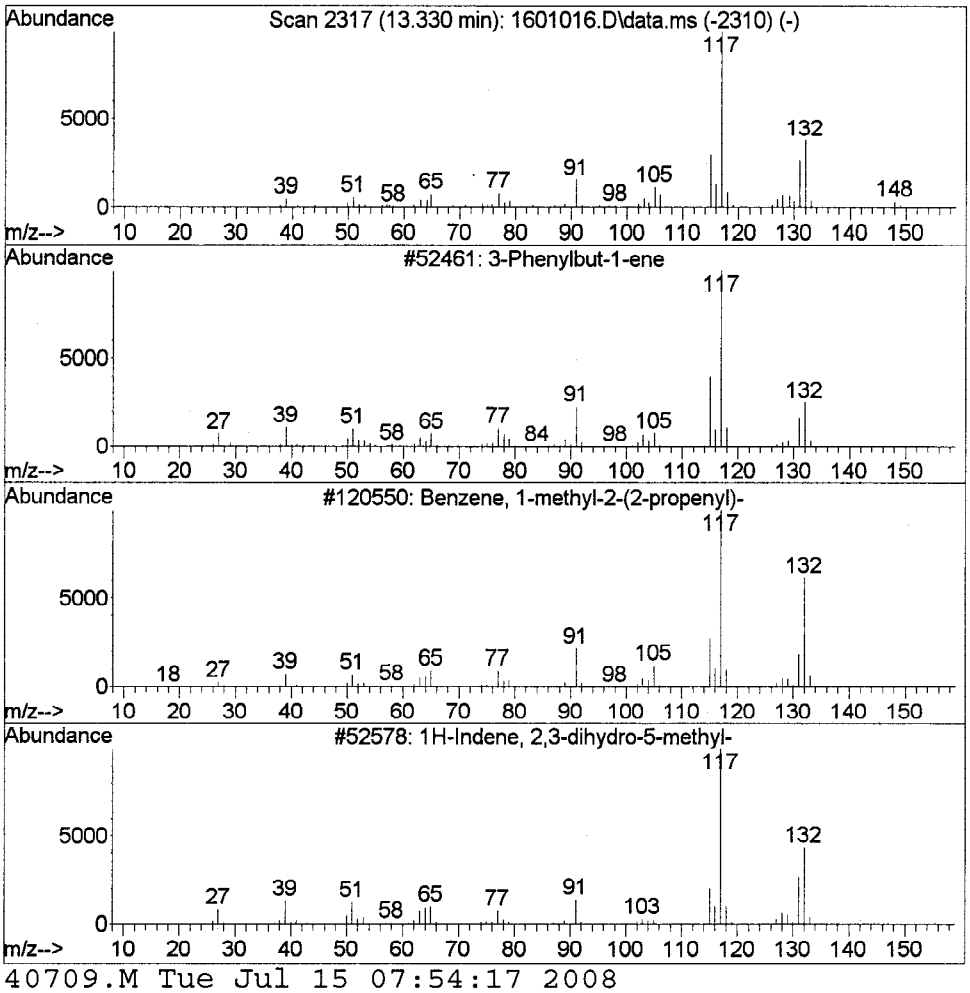
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TIC Integration Parameters: LSCINT.P

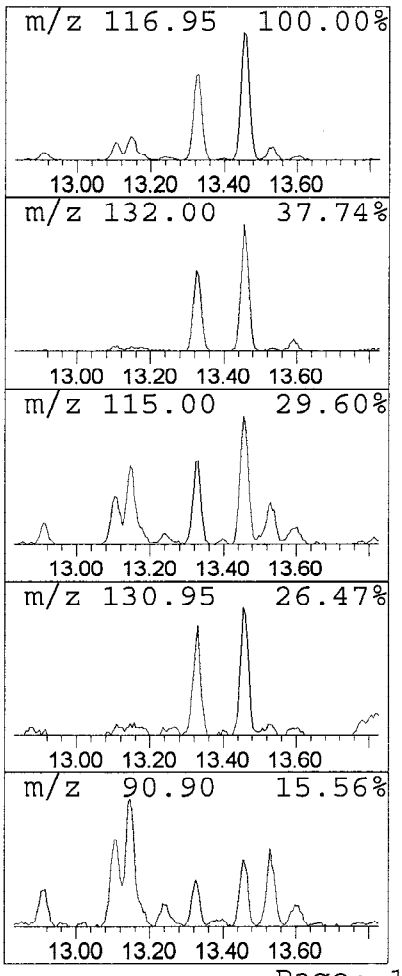
****

Peak Number 8 3-Phenylbut-1-ene Concentration Rank 6

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.330	1.74 ug/l	186015	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	3-Phenylbut-1-ene	132	C10H12	000934-10-1	90
2	Benzene, 1-methyl-2-(2-propenyl)-	132	C10H12	001587-04-8	87
3	1H-Indene, 2,3-dihydro-5-methyl-	132	C10H12	000874-35-1	87
4	Benzene, (2-methyl-1-propenyl)-	132	C10H12	000768-49-0	87
5	Benzene, 2-ethenyl-1,3-dimethyl-	132	C10H12	002039-90-9	87





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

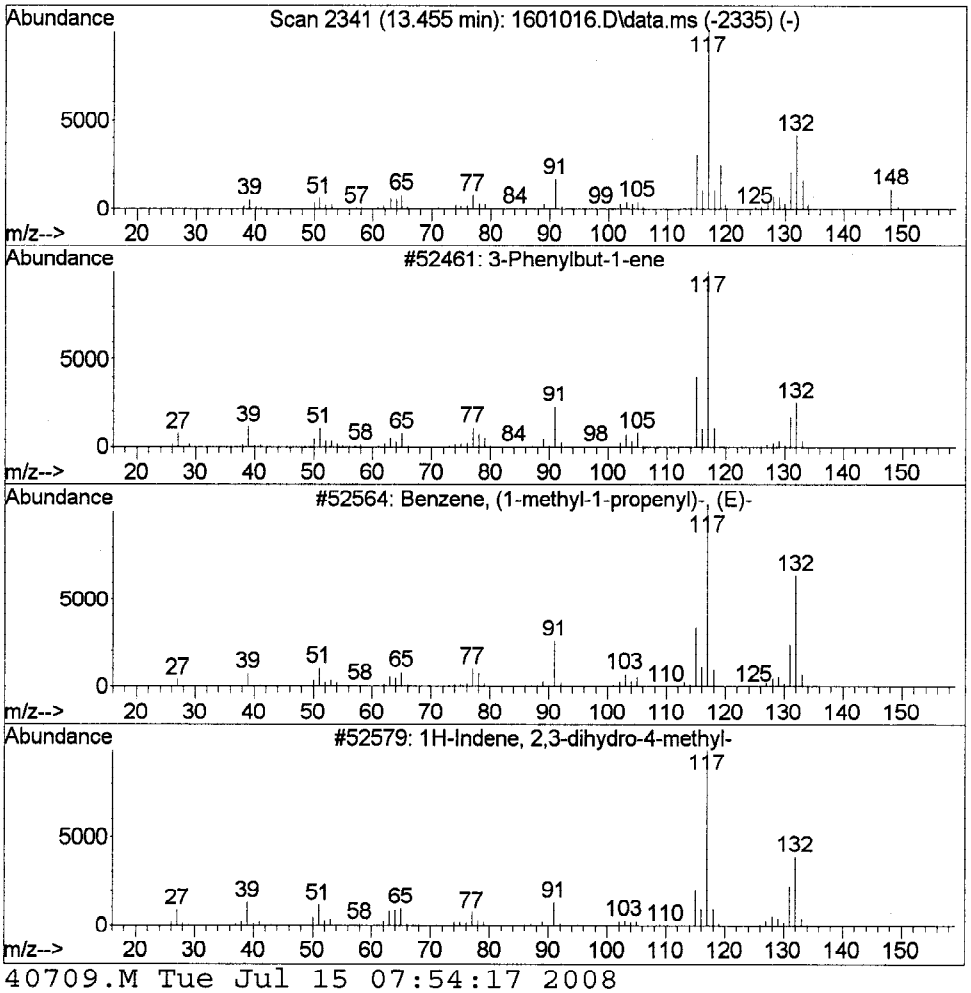
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TIC Integration Parameters: LSCINT.P

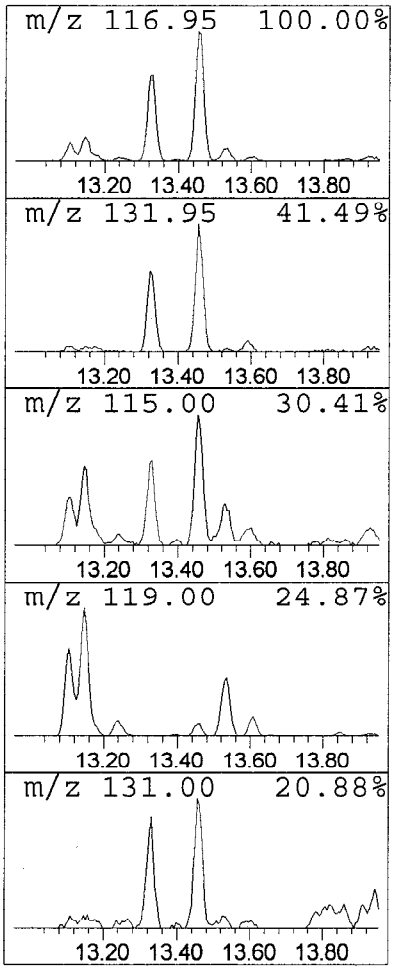
****

Peak Number 9 3-Phenylbut-1-ene Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.455	2.69 ug/l	288059	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	3-Phenylbut-1-ene	132	C10H12	000934-10-1	87
2	Benzene, (1-methyl-1-propenyl)-,...	132	C10H12	000768-00-3	83
3	1H-Indene, 2,3-dihydro-4-methyl-	132	C10H12	000824-22-6	81
4	Benzene, (1-methyl-1-propenyl)-,...	132	C10H12	000767-99-7	80
5	Benzene, 1-methyl-2-(2-propenyl)-	132	C10H12	001587-04-8	76





Library Search Compound Report

Data Path : C:\msdchem\1\DATA\VOA60714\
Data File : 1601016.D
Acq On : 14 Jul 2008 7:21 pm
Operator : Don Chamot
Sample : 08-4911-01H
Misc : SAMP 524
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\msdchem\1\METHODS\5240709.M
Quant Title : VOA4 524.2 Revision 4.1

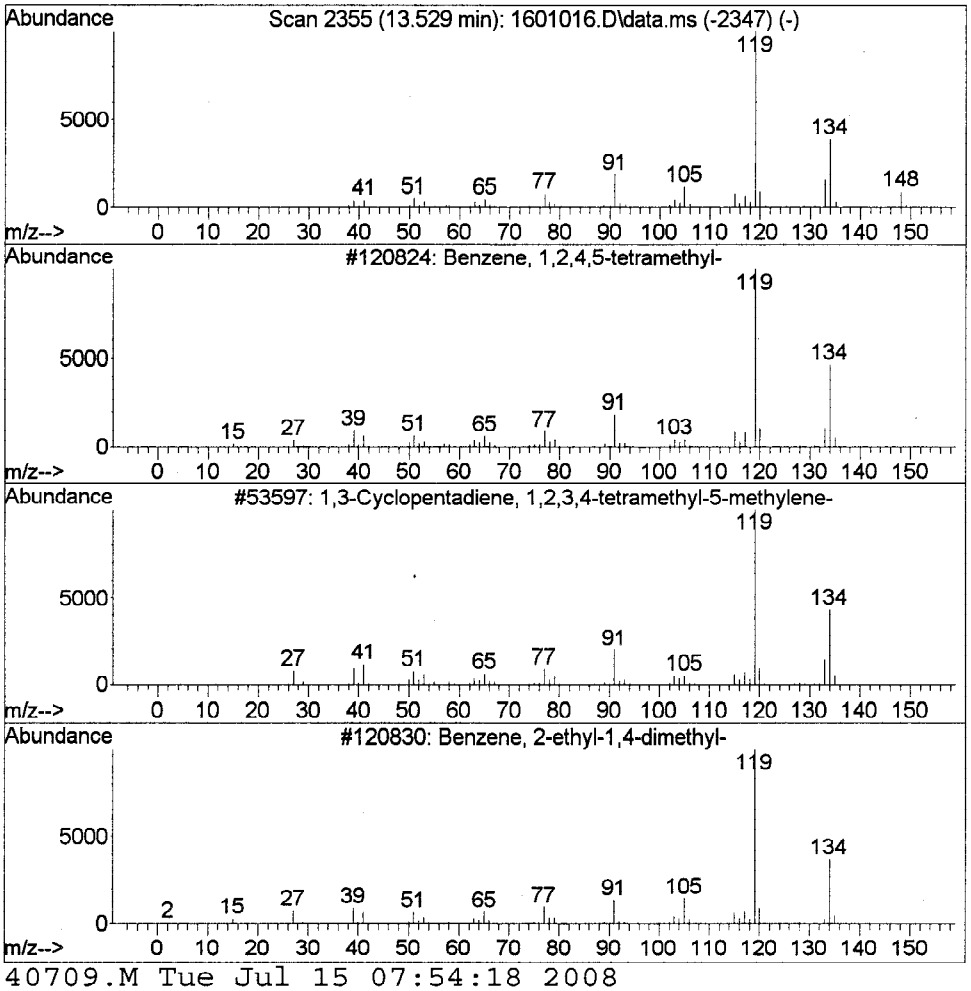
TIC Library : C:\Database\NIST98.L
TIC Integration Parameters: LSCINT.P

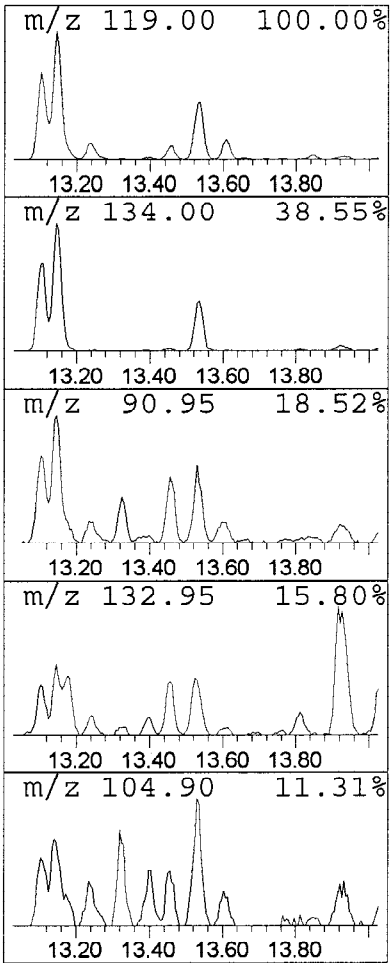
****

Peak Number 10 Benzene, 1,2,4,5-tetramethyl- Concentration Rank 5

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.529	2.44 ug/l	261706	Fluorobenzene (IS-1)	6.105

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Benzene, 1,2,4,5-tetramethyl-	134	C10H14	000095-93-2	94
2	1,3-Cyclopentadiene, 1,2,3,4-tet...	134	C10H14	076089-59-3	93
3	Benzene, 2-ethyl-1,4-dimethyl-	134	C10H14	001758-88-9	93
4	Benzene, 4-ethyl-1,2-dimethyl-	134	C10H14	000934-80-5	93
5	Benzene, 1,2,4,5-tetramethyl-	134	C10H14	000095-93-2	93





QUALITY ASSURANCE REPORTS

METHOD BLANKS (MB)

LABORATORY CONTROL SPIKES (LCS)

MATRIX SPIKES (MS/MSD)*

DUPLICATES (DUP)*

* For Metals or Wet Chemistry analyses: only included if requested.

Evergreen Analytical, Inc.

Date: *15-Jul-08*

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: anions_w

Sample ID: **MB 071108**	SampType: **MBLK**	TestCode: **anions_w**	Run ID: **IC-2000_080711A**	Prep Date: **7/11/2008**	Units: **mg/L**
	Batch ID: **R40558**	TestNo: **E300.0**	FileID: **5**	Analysis Date: **7/11/2008**	SeqNo: **712074**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	U	0.50									
Nitrite-N	U	0.0040									
Bromide	U	0.050									
Nitrate-N	U	0.010									
Sulfate	U	0.50									

Sample ID: **LCS**	SampType: **LCS**	TestCode: **anions_w**	Run ID: **IC-2000_080711A**	Prep Date: **7/11/2008**	Units: **mg/L**
	Batch ID: **R40558**	TestNo: **E300.0**	FileID: **6**	Analysis Date: **7/11/2008**	SeqNo: **712075**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	19.21	2.5	20	0	96.1	90	110	0	0		
Nitrite-N	6.23	0.020	6.09	0	102	90	110	0	0		
Bromide	20.34	0.25	20	0	102	90	110	0	0		
Nitrate-N	4.416	0.050	4.518	0	97.7	90	110	0	0		
Sulfate	30.11	2.5	30	0	100	90	110	0	0		

Qualifiers:

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J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *17-Jul-08*

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: ALK_WGRP

Sample ID **MBLK 07/11/08**	SampType: **MBLK**	TestCode: **ALK_WGRP**	Run ID: **ALK_080711B**	Prep Date: **7/11/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40501**	TestNo: **SM2320B**	FileID: **79**	Analysis Date: **7/11/2008**	SeqNo: **711156**

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

Sample ID **LCS**	SampType: **LCS**	TestCode: **ALK_WGRP**	Run ID: **ALK_080711B**	Prep Date: **7/11/2008**	Units: **mg/L CaCO3**
	Batch ID: **R40501**	TestNo: **SM2320B**	FileID: **80**	Analysis Date: **7/11/2008**	SeqNo: **711157**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Alkalinity	100.3	5.0	100	0	100	90	110	0	0		

Qualifiers:

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E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: CN_TW

Sample ID **MBLK 7/16/08**	SampType: **MBLK**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080716A**	Prep Date: **7/16/2008**	Units: **mg/L**
	Batch ID: **R40596**	TestNo: **SM4500-CN**	FileID: **47**	Analysis Date: **7/16/2008**	SeqNo: **712752**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	U	0.010									

Sample ID **LCS**	SampType: **LCS**	TestCode: **CN_TW**	Run ID: **SPEC GEN 10_080716A**	Prep Date: **7/16/2008**	Units: **mg/L**
	Batch ID: **R40596**	TestNo: **SM4500-CN**	FileID: **48**	Analysis Date: **7/16/2008**	SeqNo: **712753**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Cyanide	0.09755	0.010	0.104	0	93.8	90	110	0	0		

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: F_W

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
MBLK 07/14/08	**MBLK**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **1**		Analysis Date: **7/14/2008**	SeqNo: **711637**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
MBLK 07/14/08	**MBLK**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **78**		Analysis Date: **7/14/2008**	SeqNo: **711662**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	U	0.20									

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
LCS	**LCS**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **2**		Analysis Date: **7/14/2008**	SeqNo: **711638**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	9.5	0.20	10	0	95	95	105	0	0		

Sample ID	SampType	TestCode	Run ID	Prep Date	Units
LCS	**LCS**	**F_W**	**F_080714A**	**7/14/2008**	**mg/L**
Batch ID: **R40537**	TestNo: **SM 4500-F C**	FileID: **79**		Analysis Date: **7/14/2008**	SeqNo: **711663**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluoride	10	0.20	10	0	100	95	105	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: PH_W

Sample ID **LCS-R40505**	SampType: **LCS**	TestCode: **PH_W**	Run ID: **PH_080711B**	Prep Date: **7/11/2008**	Units: **pH Units**
	Batch ID: **R40505**	TestNo: **SM 4500H+ B**	FileID:	Analysis Date: **7/11/2008**	SeqNo: **711206**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.98	1.00	8	0	99.8	99.3	100.7	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: SULF_W

Sample ID **MBLK 07/15/08**	SampType: **MBLK**	TestCode: **SULF_W**	Run ID: **REACT_080715A**	Prep Date: **7/15/2008**	Units: **mg/L**
	Batch ID: **R40566**	TestNo: **SM 4500-S C/**	FileID: **58**	Analysis Date: **7/15/2008**	SeqNo: **712234**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	U	0.50									

Sample ID **LCS**	SampType: **LCS**	TestCode: **SULF_W**	Run ID: **REACT_080715A**	Prep Date: **7/15/2008**	Units: **mg/L**
	Batch ID: **R40566**	TestNo: **SM 4500-S C/**	FileID: **59**	Analysis Date: **7/15/2008**	SeqNo: **712235**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Sulfide	1.4	0.50	1.7	0	82.4	60	120	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: TDS_W

Sample ID **MBLK 7/14/08**	SampType: **MBLK**	TestCode: **TDS_W**	Run ID: **ANALYTICAL BALANCE_080714A**	Prep Date: **7/14/2008**	Units: **mg/L**
	Batch ID: **R40565**	TestNo: **SM 2540C**	FileID: **47**	Analysis Date: **7/14/2008**	SeqNo: **712196**

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_080714A**	Prep Date: **7/14/2008**	Units: **mg/L**
	Batch ID: **R40565**	TestNo: **SM 2540C**	FileID: **48**	Analysis Date: **7/14/2008**	SeqNo: **712197**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids	407	10.0	400	0	102	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: TSS

Sample ID **MBLK 7/15/08**	SampType: **MBLK**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080715A**	Prep Date: **7/15/2008**	Units: **mg/L**
	Batch ID: **R40570**	TestNo: **SM 2540 D**	FileID: **47**	Analysis Date: **7/15/2008**	SeqNo: **712260**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	U	5.0									

Sample ID **LCS**	SampType: **LCS**	TestCode: **TSS**	Run ID: **ANALYTICAL BALANCE_080715A**	Prep Date: **7/15/2008**	Units: **mg/L**
	Batch ID: **R40570**	TestNo: **SM 2540 D**	FileID: **48**	Analysis Date: **7/15/2008**	SeqNo: **712261**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Suspended Solids	293.5	5.0	300	0	97.8	90	110	0	0		

Qualifiers:

U - Not detected at or above the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: 16073

Sample ID: **MB-16073**	SampType: **MBLK**	TestCode: **200.8_TR**	Run ID: **ICPMS_080717A**	Prep Date: **7/16/08**	Units: **mg/L**
	Batch ID: **16073**	TestNo: **E200.8**	FileID: **080717A.B\019SMPL.D**	Analysis Date: **7/17/08**	SeqNo: **713599**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	U	0.00200									
Arsenic	U	0.00200									
Barium	U	0.0100									
Beryllium	U	0.00100									
Boron	U	0.200									
Cadmium	U	0.000500									
Calcium	U	0.400									
Chromium	U	0.00220									
Copper	U	0.0100									
Iron	U	0.200									
Lead	U	0.00100									
Magnesium	U	0.0500									
Manganese	U	0.00500									
Molybdenum	U	0.00500									
Nickel	U	0.0100									
Potassium	U	0.125									
Selenium	U	0.00200									
Silver	U	0.000200									
Sodium	U	0.500									
Strontium	U	0.0980									
Thallium	U	0.00100									
Zinc	0.006295	0.00500									

Sample ID: **LCS-16073**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080717A**	Prep Date: **7/16/08**	Units: **mg/L**
	Batch ID: **16073**	TestNo: **E200.8**	FileID: **080717A.B\020SMPL.D**	Analysis Date: **7/17/08**	SeqNo: **713600**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.009285	0.00200	0.01	0	92.9	85	115	0	0		
Arsenic	0.1003	0.00200	0.1	0	100	85	115	0	0		
Barium	0.0909	0.0100	0.1	0.0003575	90.9	85	115	0	0		
Beryllium	0.009635	0.00100	0.01	0	96.4	85	115	0	0		

Qualifiers:

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J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: 16073

Sample ID: **LCS-16073**	SampType: **LCS**	TestCode: **200.8_TR**	Run ID: **ICPMS_080717A**	Prep Date: **7/16/08**	Units: **mg/L**
	Batch ID: **16073**	TestNo: **E200.8**	FileID: **080717A.B\020SMPL.D**	Analysis Date: **7/17/08**	SeqNo: **713600**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Boron	0.88	0.200	1	0.02012	88	85	115	0	0		
Cadmium	0.00966	0.000500	0.01	0	96.6	85	115	0	0		
Calcium	1.143	0.400	1	0.08425	114	85	115	0	0		
Chromium	0.0949	0.00220	0.1	0	94.9	85	115	0	0		
Copper	0.1006	0.0100	0.1	0.001982	101	85	115	0	0		
Iron	0.944	0.200	1	0.02485	94.4	85	115	0	0		
Lead	0.01836	0.00100	0.02	0.0004424	91.8	85	115	0	0		
Magnesium	0.92	0.0500	1	0	92	85	115	0	0		
Manganese	0.1829	0.00500	0.2	0.0004291	91.4	85	115	0	0		
Molybdenum	0.09365	0.00500	0.1	0.0004256	93.7	85	115	0	0		
Nickel	0.105	0.0100	0.1	0.0004865	105	85	115	0	0		
Potassium	0.961	0.125	1	0	96.1	85	115	0	0		
Selenium	0.02176	0.00200	0.02	0	109	85	115	0	0		
Silver	0.009365	0.000200	0.01	0	93.7	85	115	0	0		
Sodium	1.026	0.500	1	0.03944	103	85	115	0	0		
Strontium	U	0.0980	0.1	0	92.5	85	115	0	0		
Thallium	0.004578	0.00100	0.005	0	91.6	85	115	0	0		
Zinc	0.2232	0.00500	0.2	0.006295	108	85	115	0	0		B

Qualifiers:

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J - Analyte detected below quantitation limits
S - Spike Recovery outside acceptance limits
E - Extrapolated value, value exceeds calibration range.
R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *18-Jul-08*

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: 16065

Sample ID: **MB-16065**	SampType: **MBLK**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080716A**	Prep Date: **7/16/08**	Units: **mg/L**
	Batch ID: **16065**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/16/08**	SeqNo: **712976**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0	0.000100									

Sample ID: **LCS-16065**	SampType: **LCS**	TestCode: **245.1_WT**	Run ID: **HG ANALYZER_080716A**	Prep Date: **7/16/08**	Units: **mg/L**
	Batch ID: **16065**	TestNo: **E245.1**	FileID: **71708**	Analysis Date: **7/16/08**	SeqNo: **712977**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.00101	0.000100	0.001	0	101	85	115	0	0		

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Evergreen Analytical, Inc.

Date: *17-Jul-08*

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 504

Sample ID: **MB-16067**	SampType: **MBLK**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **012.D**	Analysis Date: **7/16/2008**	SeqNo: **712828**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	U	0.020									
1,2-Dibromoethane	U	0.010									

Sample ID: **LCS-16067**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **013.D**	Analysis Date: **7/16/2008**	SeqNo: **712829**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.273	0.020	0.25	0	109	70	130	0	0		
1,2-Dibromoethane	0.266	0.010	0.25	0	106	70	130	0	0		

Sample ID: **LCS-16067-2**	SampType: **LCS**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **014.D**	Analysis Date: **7/16/2008**	SeqNo: **712830**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	0.274	0.020	0.25	0	110	70	130	0	0		
1,2-Dibromoethane	0.265	0.010	0.25	0	106	70	130	0	0		

Sample ID: **08-4737-01BMS**	SampType: **MS**	TestCode: **504**	Run ID: **ECD7_080716A**	Prep Date: **7/16/2008**	Units: **µg/L**
	Batch ID: **16067**	TestNo: **E504.1**	FileID: **017.D**	Analysis Date: **7/16/2008**	SeqNo: **712803**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	1.221	0.020	1	0	122	65	135	0	0		
1,2-Dibromoethane	1.186	0.010	1	0	119	65	135	0	0		

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X - See case narrative

Evergreen Analytical, Inc.

Date: *22-Jul-08*

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **GB072108**	SampType: **MBLK**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072104**	Analysis Date: **7/21/08**	SeqNo: **714853**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	U	0.0016									
Ethene	U	0.0024									
Methane	U	0.00080									

Sample ID: **LCS072108**	SampType: **LCS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072105**	Analysis Date: **7/21/08**	SeqNo: **714854**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.122	0.016	0.9548	0	118	70	130	0	0		
Ethene	1.262	0.024	0.8913	0	142	70	140	0	0		S
Methane	0.5747	0.0080	0.5094	0	113	70	130	0	0		

Sample ID: **LCSD072108**	SampType: **LCSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072106**	Analysis Date: **7/21/08**	SeqNo: **714855**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.129	0.016	0.9548	0	118	70	130	1.122	0.659	30	
Ethene	1.27	0.024	0.8913	0	142	70	140	1.262	0.627	30	S
Methane	0.5794	0.0080	0.5094	0	114	70	130	0.5747	0.825	30	

Sample ID: **08-5116-01BMS**	SampType: **MS**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072109**	Analysis Date: **7/21/08**	SeqNo: **714850**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	1.01	0.016	0.9548	0	106	70	130	0	0		
Ethene	1.128	0.024	0.8913	0	127	70	140	0	0		
Methane	0.5168	0.0080	0.5094	0	101	70	130	0	0		

Qualifiers:

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Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

BatchID: GAS072108

Sample ID: **08-5116-01BMSD**	SampType: **MSD**	TestCode: **MEEP_W**	Run ID: **FID4_080721A**	Prep Date: **7/21/08**	Units: **mg/L**
	Batch ID: **GAS072108**	TestNo: **RSKSOP175**	FileID: **GAS072110**	Analysis Date: **7/21/08**	SeqNo: **714851**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethane	0.993	0.016	0.9548	0	104	70	130	1.01	1.68	30	
Ethene	1.107	0.024	0.8913	0	124	70	140	1.128	1.88	30	
Methane	0.5074	0.0080	0.5094	0	99.6	70	130	0.5168	1.84	30	

Qualifiers:

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B - Analyte detected in the associated Method Blank
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Evergreen Analytical, Inc.

Date: *15-Jul-08*

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **MB6071408**	SampType: **MBLK**	TestCode: **524**	Run ID: **VOA-6_080714A**	Prep Date: **7/14/2008**	Units: **µg/L**
	Batch ID: **R40553**	TestNo: **E524.2**	FileID: **0501005.D**	Analysis Date: **7/14/2008**	SeqNo: **711917**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	U	0.50									
Bromobenzene	U	0.50									
Bromochloromethane	U	0.50									
Bromodichloromethane	U	0.50									
Bromoform	U	0.50									
Bromomethane	U	0.50									
n-Butylbenzene	U	0.50									
sec-Butylbenzene	U	0.50									
t-Butylbenzene	U	0.50									
Carbon tetrachloride	U	0.50									
Chlorobenzene	U	0.50									
Chloroethane	U	0.50									
Chloroform	U	0.50									
Chloromethane	U	0.50									
2-Chlorotoluene	U	0.50									
4-Chlorotoluene	U	0.50									
Dibromochloromethane	U	0.50									
Dibromomethane	U	0.50									
1,2-Dichlorobenzene	U	0.50									
1,3-Dichlorobenzene	U	0.50									
1,4-Dichlorobenzene	U	0.50									
Dichlorodifluoromethane	U	0.50									
1,1-Dichloroethane	U	0.50									
1,2-Dichloroethane	U	0.50									
1,1-Dichloroethene	U	0.50									
cis-1,2-Dichloroethene	U	0.50									
trans-1,2-Dichloroethene	U	0.50									
1,2-Dichloropropane	U	0.50									
1,3-Dichloropropane	U	0.50									

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Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: MB6071408	SampType: MBLK	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0501005.D	Analysis Date: 7/14/2008	SeqNo: 711917

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2,2-Dichloropropane	U	0.50									
1,1-Dichloropropene	U	0.50									
cis-1,3-Dichloropropene	U	0.50									
trans-1,3-Dichloropropene	U	0.50									
Ethylbenzene	U	0.50									
Hexachlorobutadiene	U	0.50									
Isopropylbenzene	U	0.50									
p-Isopropyltoluene	U	0.50									
Methylene chloride	U	0.50									
Naphthalene	U	0.50									
n-Propylbenzene	U	0.50									
Styrene	U	0.50									
1,1,1,2-Tetrachloroethane	U	0.50									
1,1,2,2-Tetrachloroethane	U	0.50									
Tetrachloroethene	U	0.50									
Toluene	U	0.50									
1,2,3-Trichlorobenzene	U	0.50									
1,2,4-Trichlorobenzene	U	0.50									
1,1,1-Trichloroethane	U	0.50									
1,1,2-Trichloroethane	U	0.50									
Trichloroethene	U	0.50									
Trichlorofluoromethane	U	0.50									
1,2,3-Trichloropropane	U	0.50									
1,2,4-Trimethylbenzene	U	0.50									
1,3,5-Trimethylbenzene	U	0.50									
Vinyl chloride	U	0.50									
m,p-Xylene	U	0.50									
o-Xylene	U	0.50									
1,3-Dichloropropene	U	0.50									
Xylenes, Total	U	0.50									
Total THM (Summation of above)	U	0.50									

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B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: MB6071408	SampType: MBLK	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0501005.D	Analysis Date: 7/14/2008	SeqNo: 711917

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 1,2-Dichlorobenzene-d4	5.5	0	5	0	110	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.34	0	5	0	107	70	130	0	0		

Sample ID: LCS6071408	SampType: LCS	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0601006.D	Analysis Date: 7/14/2008	SeqNo: 711918

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.41	0.50	5	0	108	70	130	0	0		
Bromobenzene	5.42	0.50	5	0	108	70	130	0	0		
Bromochloromethane	4.82	0.50	5	0	96.4	70	130	0	0		
Bromodichloromethane	5.5	0.50	5	0	110	70	130	0	0		
Bromoform	4.99	0.50	5	0	99.8	70	130	0	0		
Bromomethane	5.06	0.50	5	0	101	70	130	0	0		
n-Butylbenzene	5.88	0.50	5	0	118	70	130	0	0		
sec-Butylbenzene	5.6	0.50	5	0	112	70	130	0	0		
t-Butylbenzene	5.63	0.50	5	0	113	70	130	0	0		
Carbon tetrachloride	5.68	0.50	5	0	114	70	130	0	0		
Chlorobenzene	5.27	0.50	5	0	105	70	130	0	0		
Chloroethane	5.05	0.50	5	0	101	70	130	0	0		
Chloroform	5.33	0.50	5	0	107	70	130	0	0		
Chloromethane	4.57	0.50	5	0	91.4	70	130	0	0		
2-Chlorotoluene	5.46	0.50	5	0	109	70	130	0	0		
4-Chlorotoluene	5.38	0.50	5	0	108	70	130	0	0		
Dibromochloromethane	4.91	0.50	5	0	98.2	70	130	0	0		
Dibromomethane	5.32	0.50	5	0	106	70	130	0	0		
1,2-Dichlorobenzene	5.32	0.50	5	0	106	70	130	0	0		
1,3-Dichlorobenzene	5.35	0.50	5	0	107	70	130	0	0		
1,4-Dichlorobenzene	5.3	0.50	5	0	106	70	130	0	0		
Dichlorodifluoromethane	6.79	0.50	5	0	136	70	130	0	0		S
1,1-Dichloroethane	5.17	0.50	5	0	103	70	130	0	0		
1,2-Dichloroethane	5.23	0.50	5	0	105	70	130	0	0		

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H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCS6071408	SampType: LCS	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 0601006.D	Analysis Date: 7/14/2008	SeqNo: 711918

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1-Dichloroethene	5.73	0.50	5	0	115	70	130	0	0		
cis-1,2-Dichloroethene	5.53	0.50	5	0	111	70	130	0	0		
trans-1,2-Dichloroethene	5.4	0.50	5	0	108	70	130	0	0		
1,2-Dichloropropane	5.55	0.50	5	0	111	70	130	0	0		
1,3-Dichloropropane	5.35	0.50	5	0	107	70	130	0	0		
2,2-Dichloropropane	5.04	0.50	5	0	101	70	130	0	0		
1,1-Dichloropropene	5.65	0.50	5	0	113	70	130	0	0		
cis-1,3-Dichloropropene	5.46	0.50	5	0	109	70	130	0	0		
trans-1,3-Dichloropropene	4.86	0.50	5	0	97.2	70	130	0	0		
Ethylbenzene	5.52	0.50	5	0	110	70	130	0	0		
Hexachlorobutadiene	5.83	0.50	5	0	117	70	130	0	0		
Isopropylbenzene	4.92	0.50	5	0	98.4	70	130	0	0		
p-Isopropyltoluene	5.53	0.50	5	0	111	70	130	0	0		
Methylene chloride	4.81	0.50	5	0	96.2	70	130	0	0		
Naphthalene	4.63	0.50	5	0	92.6	70	130	0	0		
n-Propylbenzene	5.54	0.50	5	0	111	70	130	0	0		
Styrene	5.5	0.50	5	0	110	70	130	0	0		
1,1,1,2-Tetrachloroethane	5.35	0.50	5	0	107	70	130	0	0		
1,1,2,2-Tetrachloroethane	5.37	0.50	5	0	107	70	130	0	0		
Tetrachloroethene	5.63	0.50	5	0	113	70	130	0	0		
Toluene	5.18	0.50	5	0	104	70	130	0	0		
1,2,3-Trichlorobenzene	5.22	0.50	5	0	104	70	130	0	0		
1,2,4-Trichlorobenzene	5.14	0.50	5	0	103	70	130	0	0		
1,1,1-Trichloroethane	5.58	0.50	5	0	112	70	130	0	0		
1,1,2-Trichloroethane	5.6	0.50	5	0	112	70	130	0	0		
Trichloroethene	5.63	0.50	5	0	113	70	130	0	0		
Trichlorofluoromethane	5.28	0.50	5	0	106	70	130	0	0		
1,2,3-Trichloropropane	5.61	0.50	5	0	112	70	130	0	0		
1,2,4-Trimethylbenzene	5.71	0.50	5	0	114	70	130	0	0		
1,3,5-Trimethylbenzene	5.55	0.50	5	0	111	70	130	0	0		
Vinyl chloride	6.21	0.50	5	0	124	70	130	0	0		

Qualifiers:

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R - RPD outside acceptance limits
B - Analyte detected in the associated Method Blank
H - Prep or analytical holding time exceeded
X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: **LCS6071408**	SampType: **LCS**	TestCode: **524**	Run ID: **VOA-6_080714A**	Prep Date: **7/14/2008**	Units: **µg/L**
	Batch ID: **R40553**	TestNo: **E524.2**	FileID: **0601006.D**	Analysis Date: **7/14/2008**	SeqNo: **711918**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	10.83	0.50	10	0	108	70	130	0	0		
o-Xylene	5.26	0.50	5	0	105	70	130	0	0		
1,3-Dichloropropene	10.32	0.50	10	0	103	70	130	0	0		
Xylenes, Total	16.09	0.50	15	0	107	70	130	0	0		
Total THM (Summation of above)	20.73	0.50	20	0	104	70	130	0	0		
Surr: 1,2-Dichlorobenzene-d4	5.05	0	5	0	101	70	130	0	0		
Surr: 4-Bromofluorobenzene	5.16	0	5	0	103	70	130	0	0		

Sample ID: **LCSD6071408**	SampType: **LCSD**	TestCode: **524**	Run ID: **VOA-6_080714A**	Prep Date: **7/14/2008**	Units: **µg/L**
	Batch ID: **R40553**	TestNo: **E524.2**	FileID: **2101021.D**	Analysis Date: **7/14/2008**	SeqNo: **711933**

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	5.21	0.50	5	0	104	70	130	5.41	3.77	30	
Bromobenzene	5.58	0.50	5	0	112	70	130	5.42	2.91	30	
Bromochloromethane	4.95	0.50	5	0	99	70	130	4.82	2.66	30	
Bromodichloromethane	5.32	0.50	5	0	106	70	130	5.5	3.33	30	
Bromoform	5	0.50	5	0	100	70	130	4.99	0.200	30	
Bromomethane	3.74	0.50	5	0	74.8	70	130	5.06	30.0	30	
n-Butylbenzene	5.24	0.50	5	0	105	70	130	5.88	11.5	30	
sec-Butylbenzene	5.13	0.50	5	0	103	70	130	5.6	8.76	30	
t-Butylbenzene	5.25	0.50	5	0	105	70	130	5.63	6.99	30	
Carbon tetrachloride	5.05	0.50	5	0	101	70	130	5.68	11.7	30	
Chlorobenzene	5.28	0.50	5	0	106	70	130	5.27	0.190	30	
Chloroethane	4.86	0.50	5	0	97.2	70	130	5.05	3.83	30	
Chloroform	5.34	0.50	5	0	107	70	130	5.33	0.187	30	
Chloromethane	4.14	0.50	5	0	82.8	70	130	4.57	9.87	30	
2-Chlorotoluene	5.44	0.50	5	0	109	70	130	5.46	0.367	30	
4-Chlorotoluene	5.19	0.50	5	0	104	70	130	5.38	3.60	30	
Dibromochloromethane	4.98	0.50	5	0	99.6	70	130	4.91	1.42	30	
Dibromomethane	5.53	0.50	5	0	111	70	130	5.32	3.87	30	
1,2-Dichlorobenzene	5.36	0.50	5	0	107	70	130	5.32	0.749	30	

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X - See case narrative

Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCSD6071408	SampType: LCSD	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 2101021.D	Analysis Date: 7/14/2008	SeqNo: 711933

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	5.23	0.50	5	0	105	70	130	5.35	2.27	30	
1,4-Dichlorobenzene	5.26	0.50	5	0	105	70	130	5.3	0.758	30	
Dichlorodifluoromethane	6.35	0.50	5	0	127	70	130	6.79	6.70	30	
1,1-Dichloroethane	5.01	0.50	5	0	100	70	130	5.17	3.14	30	
1,2-Dichloroethane	5.41	0.50	5	0	108	70	130	5.23	3.38	30	
1,1-Dichloroethene	5.47	0.50	5	0	109	70	130	5.73	4.64	30	
cis-1,2-Dichloroethene	5.56	0.50	5	0	111	70	130	5.53	0.541	30	
trans-1,2-Dichloroethene	5.18	0.50	5	0	104	70	130	5.4	4.16	30	
1,2-Dichloropropane	5.43	0.50	5	0	109	70	130	5.55	2.19	30	
1,3-Dichloropropane	5.57	0.50	5	0	111	70	130	5.35	4.03	30	
2,2-Dichloropropane	4.61	0.50	5	0	92.2	70	130	5.04	8.91	30	
1,1-Dichloropropene	5.14	0.50	5	0	103	70	130	5.65	9.45	30	
cis-1,3-Dichloropropene	5.36	0.50	5	0	107	70	130	5.46	1.85	30	
trans-1,3-Dichloropropene	4.83	0.50	5	0	96.6	70	130	4.86	0.619	30	
Ethylbenzene	5.22	0.50	5	0	104	70	130	5.52	5.59	30	
Hexachlorobutadiene	5.01	0.50	5	0	100	70	130	5.83	15.1	30	
Isopropylbenzene	4.65	0.50	5	0	93	70	130	4.92	5.64	30	
p-Isopropyltoluene	5.08	0.50	5	0	102	70	130	5.53	8.48	30	
Methylene chloride	4.96	0.50	5	0	99.2	70	130	4.81	3.07	30	
Naphthalene	4.76	0.50	5	0	95.2	70	130	4.63	2.77	30	
n-Propylbenzene	5.12	0.50	5	0	102	70	130	5.54	7.88	30	
Styrene	5.45	0.50	5	0	109	70	130	5.5	0.913	30	
1,1,1,2-Tetrachloroethane	5.22	0.50	5	0	104	70	130	5.35	2.46	30	
1,1,2,2-Tetrachloroethane	5.72	0.50	5	0	114	70	130	5.37	6.31	30	
Tetrachloroethene	5.29	0.50	5	0	106	70	130	5.63	6.23	30	
Toluene	5.05	0.50	5	0	101	70	130	5.18	2.54	30	
1,2,3-Trichlorobenzene	5.26	0.50	5	0	105	70	130	5.22	0.763	30	
1,2,4-Trichlorobenzene	4.96	0.50	5	0	99.2	70	130	5.14	3.56	30	
1,1,1-Trichloroethane	4.93	0.50	5	0	98.6	70	130	5.58	12.4	30	
1,1,2-Trichloroethane	5.65	0.50	5	0	113	70	130	5.6	0.889	30	
Trichloroethene	5.29	0.50	5	0	106	70	130	5.63	6.23	30	

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Work Order: 08-4911
Client Project ID:

ANALYTICAL QC SUMMARY REPORT

TestCode: 524

Sample ID: LCSD6071408	SampType: LCSD	TestCode: 524	Run ID: VOA-6_080714A	Prep Date: 7/14/2008	Units: µg/L
	Batch ID: R40553	TestNo: E524.2	FileID: 2101021.D	Analysis Date: 7/14/2008	SeqNo: 711933

Analyte	Result	LQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichlorofluoromethane	5.02	0.50	5	0	100	70	130	5.28	5.05	30	
1,2,3-Trichloropropane	5.87	0.50	5	0	117	70	130	5.61	4.53	30	
1,2,4-Trimethylbenzene	5.42	0.50	5	0	108	70	130	5.71	5.21	30	
1,3,5-Trimethylbenzene	5.28	0.50	5	0	106	70	130	5.55	4.99	30	
Vinyl chloride	5.59	0.50	5	0	112	70	130	6.21	10.5	30	
m,p-Xylene	10.27	0.50	10	0	103	70	130	10.83	5.31	30	
o-Xylene	5.11	0.50	5	0	102	70	130	5.26	2.89	30	
1,3-Dichloropropene	10.19	0.50	10	0	102	70	130	10.32	1.27	30	
Xylenes, Total	15.38	0.50	15	0	103	70	130	16.09	4.51	30	
Total THM (Summation of above)	20.64	0.50	20	0	103	70	130	20.73	0.435	30	
Surr: 1,2-Dichlorobenzene-d4	5.4	0	5	0	108	70	130	0	0	0	
Surr: 4-Bromofluorobenzene	5.28	0	5	0	106	70	130	0	0	0	

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Evergreen Analytical Laboratory

August 14, 2008

Tom Melland
Petroglyph Energy
P.O. Box 979
La Veta, CO 81055

Lab Work Order: 08-4911
Client Project ID:

Dear Tom Melland:

Enclosed are the analytical results for the samples shown in the Laboratory Work Order Summary. The invoice is included with this report or has been mailed to another party as indicated on the chain of custody.

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

Kaprie Hollman/Carl Smits
Quality Assurance
khollman@evergreenanalytical.com